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COMPETITIVE INFORMATION

Companies post way too much proprietary information about their products, services and employees online. Read about the painful lessons that retailers, banks and other companies have learned by allowing competitive information to fall into the wrong hands—and how you can prevent it from happening to you. **Story starts on page 26.**



COPYRIGHT HOLDERS TURN TO IT

Analysts say bill requiring vendors to block music, video piracy could hurt tech industry

BY PATRICK THIBODEAU
WASHINGTON

Federal legislation mandating copyright protection technology on PCs and other devices may change PC and software design forever and even block imports of machines that don't meet the proposed standard.

The bill, introduced by U.S. Senate Commerce Committee Chairman Fritz Hollings (D-S.C.), would require hardware and software makers, which are opposing it, to build copyright protection into their products. The bill's initial goal is to create a voluntary technical standard to stop piracy. If the bill is passed and a standard isn't agreed upon within 12 months, the Federal Communications Commission would develop one.

"I think it's a very, very badly

What's Going On?

The chairman of the Senate Commerce Committee, Fritz Hollings, has introduced a bill mandating copyright protection.

The bill seeks: Copyright protection on all "digital media devices," including PCs.

Scope: The bill describes only what it wants, not how to get there.

Significance: Heavy content industry backing, and it's getting high-profile attention on Capitol Hill.

Outlook: Not likely to pass, but may be used to seek voluntary standards that could still impact corporate IT.

conceived idea," said David I. Farber, a professor of telecommunications systems at the University of Pennsylvania in Philadelphia and a former chief technologist at the F.C.C.

Copyrights, page 57

USERS, J.D. EDWARDS FACE ARBITRATION

Cases involve early rollouts of applications

BY MARC L. SHOWN

The fallout from problematic early installations of J.D. Edwards & Co.'s OneWorld business applications continues to be felt by the vendor and some would-be users that are pursuing legal claims against it.

Analysts said performance issues and functionality gaps that affected some early

The World of OneWorld

History: The software was introduced in 1998 and became available the next year. A collaborative OneWorld release was added in 2000.

Number of users: 1,500

Key components: Distributed object architecture, built-in business rules engine, Web-based user portal.

Operating systems supported: Windows 2000/Windows NT, AOL, HP-UX, Solaris, OS/400.

adopters of OneWorld have lunged since been resolved. But J.D. Edwards this month is scheduled to go into preliminary arbitration hearings with Los Angeles-based Spectratek Technologies Inc., which is one of at least five disgruntled customers that took legal action after running into problems with OneWorld rollouts.

Spectratek, a maker of decorative products such as holographic films and plates, alleged in a lawsuit filed in June 2000 that J.D. Edwards didn't deliver promised data-sharing and bookkeeping functions in the OneWorld release it tried to install under a contract signed in late 1998.

"The system wasn't ready yet when [Spectratek] bought it," said company attorney William McTaggart, who works at Los Angeles-based law firm Parker, Milliken, Clark, O'Hara J.D. Edwards, page 16

IT TO HELP BANKS FIND LAUNDERERS

Financial firms hustle to be ready for new law

BY LUCAS NEARMAN

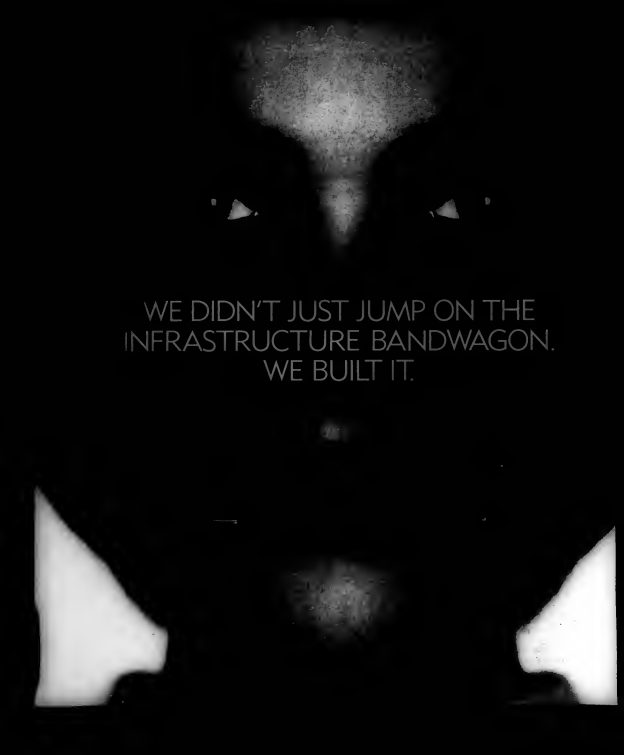
The nation's banks and brokerages are racing to beat an April 24 deadline to have in place U.S. Patriot Act compliance programs that are aimed at spotting terrorists who may

be using money-laundering schemes to finance their activities.

The USA Patriot Act was signed by President Bush in October in response to the Sept. 11 terrorist attacks. New regulations under the act will not only extend previous anti-money-laundering regulations beyond banks to all financial service firms, but will also likely require them to provide the U.S. Department of the Treasury's Financial Crimes Enforcement

Launderers, page 57

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BIOTECH SKILLS MATCHING

IT managers like Glaxo-SmithKline's Terry Francis (left) are in need of programmers and data management experts as biotechnology and pharmaceutical firms race to decode the human genome and pave the way for medical breakthroughs. **PAGE 28**



3-D ON DISPLAY

The first commercial high-resolution imaging system that lets users see an object in true 3-D offers a walk-around view. **PAGE 44**

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COMPUTERWORLD THIS WEEK

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6 Corporate IT concerns are now a major focus of the Microsoft anti-trust case.

7 Companies in need of tools to help them manage the growing number of handhelds in the enterprise get some welcome relief.

8 Some developers who attended last week's JavaOne conference want to use both Java and Microsoft's .Net in a mixed environment.

10 A new report says that two months after the Sept. 11 attacks, a lack of effective corporate disaster recovery planning was still widespread.

12 VeriSign finds itself bombarded with complaints from Web site owners who don't like the domain name registrar's business tactics.

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For breaking news, updated twice daily, visit our Web site: www.computerworld.com
#C40000

BUSINESS 25

25 Paul A. Straumann aims to dispel a myth by using data from the last decade to refute a view long held by IT consultants, vendors and government economists: that the more money a company pours into IT, the lower its transaction costs will be.

34 Book Reviews: Our reviewers check out James Champy's updated volume on business process re-engineering, as well as books about how the Internet has changed managers' organizational approaches and how to handle the intergenerational gaps in today's workplace.

36 Videoconferencing is helping companies like Ernst & Young and Bristol-Myers Squibb get quick ROI in the form of travel savings and increased worker productivity.

38 Career Advisor: Fran Quintel offers advice about the job opportunities—or the lack thereof—for mainframe specialists.

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41 Nicholas Petrolis takes an April Fool's look at the recent troubles at the INS and acknowledges that he was too tough on Pacific Bell.

42 Business analytics over the Web can provide vital information for decision-makers, but integration issues are keeping projects small.

48 Future Watch: Rampant viruses and worms could bring down PDAs, mobile phones or even the entire Web as malware evolves along with the rest of IT.

48 Security Manager's Journal: Vince Tuesday is skeptical about the value of security certifications but decides that sending employees to get them does have key benefits.

50 QuickStudy: Random numbers can be produced by physical processes such as flipping a coin. But software can create only "pseudo-random" numbers. Learn more in this week's tutorial.

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22 Patricia Keefe says there's plenty of work for IT organizations to do as we wait for the economy to begin its recovery.

22 Pimen Fox takes that suggestion a step further, warning that IT personnel won't be loyal when the recession is over unless you treat them well now.

23 Thornton May writes that IT leaders have several roles to play in protecting the most important source of value in an information-driven economy: intellectual property.

58 Frank Hayes says the Navy has a laudable goal in wanting all of its new IT systems to work with its old ones—but that's impossible to accomplish.

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ONLINE

ANTITRUST UPDATES

For the latest news from the Microsoft antitrust trial, head to our Microsoft Legal Issues page. www.computerworld.com/mlegal

PROTECTION, OR ASSAULT ON RIGHTS?

Community members are engaged in a lively discussion over a proposal that would embed copyright protection into PCs, handhelds and other electronic devices. Have your say in our online forum. www.computerworld.com/47a1700

THE .NET DECISION

Microsoft development shops should consider all options—including delaying projects or moving to Java—before going forward with new projects under .Net, says guest columnist Daniel Mesick in our operating systems community. www.computerworld.com/community4

PRIVACY SPOTLIGHT

This week, *Computerworld.com* introduces a monthly column by Jay Cline, who will take a critical look at privacy issues from a perspective that's rarely heard: the corporate privacy manager's. His first column examines the privacy implications of the war on terrorism. www.computerworld.com/4720474

AT DEADLINE

Oracle to Offer Outsourcing on 91

Oracle Corp. this week plans to announce that it will begin offering outsourcing services to users of its Oracle database and application server software. Oracle said it will handle day-to-day administration tasks on those products for customers that sign outsourcing deals. The software vendor already has an outsourcing program for its E-Business Suite 7.0 applications.

Microsoft Issues New Web Browser Patch

Microsoft Corp. issued a software patch designed to fix its newly discovered security holes in the Internet Explorer Web browser. The company gave a "vulnerability" severity rating to the vulnerability, one of which could let attackers place malicious code in Internet cookies that would be saved to the disk drives on unprotected PCs.

Network Associates Bids on McAfee.com

Santa Clara, Calif.-based Network Associates Inc. on Friday began a tender offer aimed at giving it full control of antivirus software vendor McAfee.com Corp. Network Associates had purchased the company after disclosing that the Securities and Exchange Commission is investigating its past accounting practices (see story, page 20). Sunnyvale, Calif.-based McAfee.com said the offer is "financially inadequate."

FBI Nabs Ex-Global Crossing Worker

The FBI arrested a former IT worker at Hamilton, Bermuda-based Global Crossing Holdings Ltd. who had posted personal data about company employees on its Web site. Steven Sotolanda, 41, was charged with transmitting, U.S., and received with making threats via the Internet.

Microsoft Trial Shifts To Enterprise Concerns

Software integration, porting Office to Linux examined as court continues remedy phase

BY PATRICK THIEDHAU
WASHINGTON

CORPORATE IT concerns are getting top billing in the Microsoft Corp. antitrust trial as the federal judge overseeing the case considers proposed remedies intended to improve server integration and desktop competition by porting Office to Linux.

Carl Ledbetter, chief technology officer at Novell Inc., told the court last week that Microsoft hasn't disclosed several application programming interfaces (API) "sufficiently" to improve the interoperability of Windows and NetWare, his company's network operating system.

The remedy proposed by the nine nonsetting states and the District of Columbia would give Novell and other firms access to Microsoft's source code. A proposed settlement agreed to by Microsoft and the Bush administration requires Microsoft to disclose APIs, the doorways between programs, but it doesn't give competitors direct source-code access.

Interoperability a Concern

The interoperability of NetWare with Windows applications is a concern of Hugh Winesett, a senior systems analyst at Southwest Gas Corp., a Las Vegas-based utility with 1.3 million customers. The company runs far more NetWare servers than Microsoft servers but uses Microsoft applications such as Excel and Winesett said there are sometimes problems with performance and file-saving on Novell servers.

Southwest Gas remains committed to NetWare be-

cause of the software's cost and stability, said Winesett, but there's pressure to change. Interoperability issues draw management questions that put IT managers on the defensive. "It forces you into a Microsoft solution because of user complaints," he said.

The nonsetting states would also require Microsoft to auction Office licenses to rival developers so they can port the software to other operating systems. One

company likely to bid on such a license is Linux vendor Red Hat Inc.

Michael Tiemann, chief technology officer at Raleigh, N.C.-based Red Hat, told the court last week that support for Office is "the first question" asked by enterprise users. Making Office available on Linux would help the open-source operating system improve its market share, which is currently 2%, he added.

IT managers agreed. "If Office were available for a Linux desktop, there would be a number of CIOs who would push their desktop teams to Linux," said Brian Kilcourse, the CIO at Longs Drug Stores

Corp., a Walnut Creek, Calif.-based retail chain with about 5,000 end users.

One reason Kilcourse said he would consider switching to Linux is because Microsoft is making it "increasingly difficult to choose enterprise tools" such as Java "that aren't Microsoft-based on the server side."

Office on Linux would make it possible for Jack Billard, the IT manager at dairy H.P. Hood Inc. in Chelsea, Mass., to consider installing Linux on user laptops—if he knew that there would be no technical problems and that it would save money. "If it's not going to be cost-effective, why would I bother making the change?" he asked. ■

Quick Link

For more on the ongoing antitrust case, visit our Web site.
www.computerworld.com/p0202

HP/Compaq Brace Workers For Integration, Layoffs

Memo sets stage for postmerger plans

BY JANAMURU VIJAYAN

An expanded team of 1,200 employees from Hewlett-Packard Co. and Compaq Computer Corp. is finalizing postmerger integration plans even as the two companies await formal notification that HP shareholders have approved their proposed \$21 billion merger.

Webb McKinney at HP and Jeff Clarke at Compaq, who are leading the merger integration planning team, last week said in a memo sent to employees of both companies that the process is on track.

"One of our key goals from the start of this process was to make sure the new company

would be prepared to open its doors and hit the ground running in the April-May time frame. We are on target to reach this goal," the memo stated.

"Of course, there has been some level of coordination between the two companies, but up to now most of it has been at a fairly high level," said Dwight Davis, an analyst at Boston-based Summit Strategies Inc. "Now comes the tough part, when you have to get down to the nitty-gritty details" of figuring out product line strategies and deciding who stays and who goes, he said.

A launch team has been created within the integration team to deal with prelaunch, launch day and post-launch communica-

tions, the HP memo stated. The goal is to make sure that all employees have access to the same information at the same time.

In a separate memo to employees, HP CEO Carly Fiorina and her counterpart at Compaq, Michael Capellas, discussed competitors "who are trying to take advantage of our current situation to spread fear, uncertainty and doubt among our customers."

"Putting anything on hold while we wait for a final proxy vote tabulation is simply not an option," the memo added. Over the next week, employees from both companies can expect to get details on the new management team's direct reports, organizational structure and the selection process that will be used to fill jobs in the new company, the memo said.

HP and Compaq previously disclosed that 15,000 jobs will be eliminated. ■



FIORINA and HP await final approval from shareholders.



CAPELLAS: Rivals are spreading fear, uncertainty, doubt.

Quick Link

For complete coverage of the HP/Compaq merger, visit our Web site.
www.computerworld.com/p02020

IT Teams Get Much-Needed Tools to Manage Handhelds

Remote shut-off,
program updates
among features

BY MATT HANBLER

With handheld devices becoming increasingly common in the workplace, IT managers have been searching for effective device-management tools to send software updates and to shut down devices containing vital data if they're lost or stolen.

Two user companies announced rollouts of software to manage handheld devices last week, one using a wireless network. The IT managers in charge of the projects declared the early results impressive.

"There have been lots of articles and talk by analysts about the risk of having intellectual property on handheld devices outside the firewall" that could be lost, said Tom Herzog, communications tools manager at Mentor Graphics Corp. in Wilsonville, Ore. "These things are walking time bombs."

But Mentor Graphics now uses Afaria device management software from XcelleNet Inc. in Alpharetta, Ga. And with it, Herzog said, "we think we have that security problem better mitigated."

A provider of hardware and software for designing electronics products, Mentor Graphics has about 250 BlackBerry wireless devices from Research In Motion Ltd. in Waterloo, Ontario, in the hands of salespeople and managers worldwide. The company began the rolling out Afaria to track handhelds and improve security in December.

A dozen cases have been reported of users losing the devices, sometimes without password protection enabled. Mentor Graphics was able to turn off those devices remotely, Herzog said. The software is

also able to match a device with a user so that when arrival bills are received, the company can quickly decide how to charge internal workgroups. Moreover, Afaria gives Mentor Graphics the ability to push applets to salespeople, who can use those applets to access information on customers.

At less than \$60 per seat, the software is well worth it, Herzog said. "How do you put a price on the potential of losing vital data?" he noted.

Meanwhile, Nancy Braatz, senior technology analyst at

[Handheld devices] are walking time bombs.

TOM HERZOG, COMMUNICATIONS
TOOLS MANAGER,
MENTOR GRAPHICS CORP.

Waukesha Engine, Dresser Inc., has installed ZENworks for Handhelds 4.7 from Novell Inc. to manage 70 IPaq handhelds from Compaq Computer Corp. The Waukesha, Wis.-based company can now forward software updates or standard documents to users' de-

vices without any user intervention, said Braatz.

The rollout is "very cost- and time-effective," she added, especially since the growing number of handhelds has to be managed by a static number of IT workers. The per-user license fee is \$99.

Currently, Waukesha Engine users must synchronize the IPaq in a cradle to get the updates. But the company is considering a wireless LAN that would enable updates directly to the devices, Braatz said.

Analysts described the rollout as good examples of how the device management market is starting to grow as the number of handheld users mushrooms. There are more than 31 million mobile workers in Western Europe, Latin

America and the U.S., and that number should almost double by 2004, according to IDC in Framingham, Mass.

About 20 vendors offer device management products, including some that will function over bandwidth-constrained wireless networks. XcelleNet and some other players have reputations for managing laptops and are now extending that capability to handhelds, analysts said. ("Wireless: Seeking New Management," Page 32, Dec. 10.) Novelty bought Whetstone, Calif.-based Callisto Software Inc. in December to enter the market. ■

Quick
Links

For more on this subject, visit our related special focus page
www.computerworld.com/cw0206

Thomson Turns to XML for Report Indexing

'Tagging' effort marks start of many
XML projects to emerge from Wall Street

BY LUCAS BEARAN

Thomson Financial is in the midst of rolling out XML tagging software that will automate the indexing of investment analyst reports as part of an effort aimed at giving customers greater access to its enormous repository of its corporate data to an XML format.

Every month, New York-based Thomson has been manually indexing 40,000 eight- to 12-page Portable Document Format financial reports about

menting with the development schema. Metropolitan Life Insurance Co. is building a real-time relational database based on XML, and Fidelity Investments recently completed an enormous retrofit of its corporate data to an XML format.

Every month, New York-based Thomson has been manually indexing 40,000 eight- to 12-page Portable Document Format financial reports about

various companies and industries. Thomson then posts the information on a secured Web site to sell to the financial services industry.

Thomson hired about 15 data indexing specialists to "crude-ly index" 120 documents each day by hand so customers can search for specific reports, according to Jeffrey Mastendino, vice president of content management at Thomson Financial. It took about six months to train the specialists, and the process was time-consuming, labor-intensive and often inconsistent, he said.

In December, Thomson and New York-based ClearForest

Corp. signed a deal worth "hundreds of thousands of dollars" that calls for Thomson to use ClearForest XML-tagging software that will automatically set up research documents for archiving and offer more precise searches on data, according to Mastendino.

The initial ClearForest implementation should be completed this quarter and deliver some heady returns, said Mastendino. "We think on the report-level side it's going to be pretty significant to savings. Turnaround time will be almost immediate for the bulk of documents," he said. "The implementation we designed will be able to handle that systematically, and probably two-thirds of the research will be able to be handled automatically." ■

Playing Tag

Tip for developing XML tagging systems:

- 1 Understand where the company stands in the development of an overall information life cycle. For example, is terminology well understood and agreed upon, or are industry standards terms sufficient?
- 2 Determine how the business process will

use the XML tags/categories. If accurate information retrieval across disparate systems is key, then a distributed tagging process may provide the best value. If analyzing and describing relationships between documents is key, then the ability to mine the entire body of document classifications is required.

- 3 Experiment with the tools before buying. Bring in participants from all of the important organizations to participate in the evaluation.

- 4 Get management buy-in on the process and the resources needed to support these products. Vendor claims can make this technology appear to deliver much more information than it does in practice.

- 5 Establish a project champion early in the process. The best champion may come from the business unit where the subject-matter resources are most closely aligned with the business vocabulary.

SOURCE: DATA OPERATIONS GROUP INC. CAMDEN, N.J.; MARCH 2002

Some Users See Java on Back End, .Net on Front End

Mixed environment could prove useful for some large companies, analysts say

BY CAROL SULIVA
SAN FRANCISCO

DANIEL JEPPI is a Java developer at a London-based investment bank.

But in two weeks, he will be taking a course on Microsoft Corp.'s new .Net development environment.

Jeppi, a speaker at last week's JavaOne conference here, said his company, Dresdner Kleinwort Wasserstein, is keen to use .Net on the front end of its applications and Java 2 Enterprise Edition (J2EE) technologies on the back end.

While Dresdner's scenario didn't represent the norm among attendees randomly polled at the Java conference, signs are emerging that the firm's tactic may be explored by other large companies.

Mike Gilpin, an analyst at Cambridge, Mass.-based Giga Information Group Inc., said the notion cropped up frequently at his firm's recent application developer conference in London. Attendees said the chief reason they need .Net and J2EE to interoperate is to run .Net front ends against J2EE-based back ends, he said.

Giga analyst Randy Heffner said the fundamental shift paving the way for such interoperation is Web services. In the past, Microsoft and Java technologies could be made to work together through the Common Object Request Broker Architecture (CORBA), Microsoft's Distributed Component Object Model (DCOM) or Remote Method Invocation (RMI), he said.

But since there was no built-

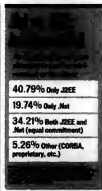
in support for the technologies in products and no cross-platform agreement "among Microsoft and everybody else," the approach got pushed "to the realm of special tools," Heffner said. Now that Microsoft and Java vendors are building support for XML, the Simple Object Access Protocol and other Web services technologies into their products, the .Net/J2EE option may get considered, he said.

Gilpin said the approach can work well for companies that need a rich user experience on a Windows client, because ".Net has a real advantage in creating that." He said a company might do that in combination with a J2EE or J2E/J2E Web services back end "if they need the flexibility/portability or integration

capabilities those J2EE products offer on the back end but can't suffice with the best, rich GUI that Java can offer."

The downsides of the approach — complexity and cost — make it worthwhile only if there's a great business need for a rich user experience, Gilpin said. For instance, a rich graphical user interface for a call center operator might save a company millions of dollars if the average service call is reduced by even three seconds, he said.

Thomas Murphy, an analyst at Stamford, Conn.-based Meta Group Inc., said he expects that companies will take the combination approach — a .Net front end and J2EE back end — to better utilize developers' skills. He said those trained in Java might work on back ends and those skilled in Microsoft's Visual Basic and Active Server Pages on front ends, since Microsoft's technology is currently better for building thin-



client, browser-based applications that use dynamic HTML.

But if companies use the Microsoft user interface with Java business components, performance will probably suffer and the application will be harder

to debug and maintain, Murphy cautioned.

Jeppi said his company aims to use Microsoft's drag-and-drop tools to put together front ends very rapidly. He added that the bank probably wants to hedge its technology bets. "Nobody's sure exactly where this market is going to be in five years' time — Java or Microsoft. So I think they want a little bit of both," he said.

Large firms expect to use both Java and .Net, according to some polls, but the surveys typically don't distinguish between front- and back-end use.

One developer with a major pharmaceutical company, who asked not to be identified, said large companies have to watch for any technology that might be useful to guard against vendor lock-in. He said he has already been visited by two vendors promoting .Net and that he expects to evaluate it.

But David Eng, a software engineer at Bethesda, Md.-based Lockheed Martin Corp., said his company may be hesitant to use .Net because it is untested. "A lot of our projects are government, and [the technology] has to be reliable," he said. ■

Gosling Says .Net Falls Short of Expectations

BY CAROL SULIVA
SAN FRANCISCO

Java creator James Gosling, a vice president and fellow at Sun Microsystems Inc., shared with Computerworld his views on Microsoft Corp.'s rival .Net development environment, its new C# language and its promotion of Web services, during last week's JavaOne conference.

Is there anything in the .Net architecture that you actually admire? Chutzpah... I guess I found it really disappointing. I mean, there had been all kinds of rumors and that about what their Common Language Runtime, and what this new [C#] language, was going to be. And we were sort of imagining all kinds of clever things that they could do. They didn't choose

to do any of them. I found it sort of puzzling.

What could they have done? They certainly could have been more creative about the language. They could have been more careful about things like the memory model. They had certain things that were imposed on them, like the fact that they had to support C and C++ meant... effectively crippling the memory model with these sort of loophole constructions, which really cripples the reliability and security stories...

I guess one of my pet areas is scientific computation. They might have done something creative

to make that easier. They might have done something creative around... integrating business logic into the language.

What would you tell corporate IT people who are debating between .Net and Java 2 Enterprise Edition (J2EE)? I think the most important thing I'd say to people comparing J2EE vs. .Net is that J2EE is a market. [and] .Net is a product...

You'll find hundreds of companies with components and tools and app servers in the J2EE world. The way it's organized, the community actually controls what happens. It isn't just dictated to them. It's a very different, very different beast from sort of

a socioeconomic point of view. Technologically, there's a lot more there in J2EE.

You look at all the [application programming interface]... the sets of tools available. I mean, there isn't just one place to do networking.

Some corporate users have expressed an interest in using .Net for the front end and Java on the back end. How does that strike you? It's certainly the case that Microsoft pretty much may have an absolute monopoly on the client — certified and convicted. And so in some sense, that makes it sort of easier for them on the client end. I think these folks would be amazed to discover how easy it is to write client software on the PC in Java. That works very well. And from a personal point of view, I personally actually really like [Windows] XP license and decided I couldn't sign it. So I've been shifting over to Mac. ■

But since there was no built-in support for the technologies in products and no cross-platform agreement "among Microsoft and everybody else," the approach got pushed "to the realm of special tools," Heffner said. Now that Microsoft and Java vendors are building support for XML, the Simple Object Access Protocol and other Web services technologies into their products, the .Net/J2EE option may get considered, he said.

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BRIEFS

CA in New Dust-up With Investment Firm

Dallas-based Ranger Investments Ltd., the investment firm that last year engaged in unsuccessful fight for control of Computer Associates International Inc.'s board, filed a new suit in the form of an open letter urging shareholders to oust CA's chairman, CEO and chief financial officer, H.Y.-based CA said. Ranger's relative was "misleading, self-serving and inaccurate."

Oracle Combines ERP, CRM Development

Oracle Corp. said it's combining the groups that develop its enterprise resource planning (ERP) and customer relationship management (CRM) applications. The operation will be headed by Ron Wald, an executive vice president who has been in charge of the ERP unit. Oracle said it is aiming to reduce distinctions between the applications.

Computer Glitch Disrupts Barclays

London-based Barclays Bank PLC disclosed that a systems glitch disrupted customer deposits, electronic bill payment services and other transactions. The problem occurred when computers that connect Barclays to the U.K.'s Bankers Automated Clearing System network failed. The reasons for the failures weren't clear, but Barclays said it was able to fix the glitch.

Short Takes

IBM upgraded its WebSphere e-commerce software and announced new middleware that supports Web-based clearance of payments between financial institutions. . . Portland, Ore.-based DISTRIBUTED MANAGEMENT TASK FORCE INC., which is developing interagency standards for IT management tools, gave ORACLE a seat on its board of directors.

Disaster Recovery Planning Still Lags

Worldwide survey shows many firms lack bare-bones strategy in wake of Sept. 11

BY DAN VERTON

TWO MONTHS after the Sept. 11 terrorist attacks, the lack of corporate disaster recovery and business continuity planning was still widespread, according to a newly released survey.

Conducted in November by accounting and consulting firm Ernst & Young International, the survey polled 459 CIOs and IT directors from companies of various sizes worldwide. The results were released in late March. The survey found that only 53% of those companies had business continuity plans to keep operations going in the event of a major disaster and that less than half had IT security awareness and training programs for employees.

Nathaniel Meyer, a spokesman for New York-based Ernst & Young, said the survey targeted midsize to large companies in all economic sectors throughout 17 regions of the world, including the U.S. and Europe. None of the companies surveyed were small businesses, Meyer said.

The Larger Picture

Some CIOs and security experts contacted by Computerworld last week said they weren't sure of the significance of the results without having a breakdown of the sizes of the companies surveyed. Some also questioned any expectation that companies would necessarily have disaster recovery plans in place just two months after the attacks if no such plans had already existed. Others, however, said two months

was plenty of time, given the nature of the wake-up call. Nancy Bryant, CIO at 1st City Savings Federal Credit Union in Los Angeles, said there's no reason that companies shouldn't be able to put a basic business continuity plan in place within two months. "It doesn't need to have the fancy writing, but a bare-bones plan could be in place within two months," said Bryant. "We're not talking a great outlay of money, either."

Bryant said she has outfitted all of her employees at six branch offices with remote capabilities, and the company is prepared to move to a co-location facility if the main office is affected by a disaster.

"A company can put in the structure, policies and procedures of a continuity plan and

can convene a steering committee of all the parties that would need to be involved in such a plan," said Alan Paris, a partner at Capco, a financial services consulting firm located near ground zero in Manhattan. "They can also do an assessment of readiness. Within two months, you can certainly do that much."

Back Burner

Disaster recovery still isn't a central component of many corporate strategies:

29% of survey respondents said business continuity planning is a business unit responsibility.

45% of respondents said disaster planning appears to be on the IT budget.

49% of respondents said basic disaster plans have actually been tested.

SOURCE: ERNST & YOUNG INTERNATIONAL, NEW YORK. SURVEY OF 459 CIOs AND IT DIRECTORS.

FAA Adopts Wireless Encryption for Security

BY DAN VERTON

Although it's still years away from replacing its current voice-based air traffic control system with a digital data link backbone, the Federal Aviation Administration last week addressed the thorny issue of security by licensing wireless encryption technology.

The FAA will license public-key infrastructure (PKI) technology from Hayward, Calif.-based Cerlicom Corp. The move comes as the FAA enters the implementation phase of its Aeronautical Telecommunications Network (ATN). The ATN is a next-generation data link network being developed by the International Civil Aviation Organization that will eventually be used by air traffic controllers to send com-

mands to virtually all pilots.

The FAA and its partner in the program, Arlington, Va.-based ATN Systems Inc., a privately held, for-profit corporation owned by 11 U.S. airlines, declined to comment on the security requirements of the ATN. But experts from Cerlicom and the aerospace industry acknowledged that the use of encryption will be paramount to prevent malicious hackers or terrorists from injecting false commands into the data link between ground controllers and pilots.

"Their biggest concern is authentication. The information is only of value if it's real time," said Prakash Panjwani, a senior vice president at Cerlicom. He said pilots need to have assurances that the information is

from legitimate air traffic controllers. Panjwani said the FAA's selection of Cerlicom's products stemmed from its need for the encryption technology to work in extremely low bandwidth conditions. Currently, controllers are dealing with a throughput of 150 kb/sec. at peak times, he said.

To overcome that restriction, the ATN will rely on Cerlicom's Elliptic Curve Cryptography, a standard for digital signature algorithms that offers more efficient use of bandwidth than other PKI algorithms, Panjwani said. ■

Rick Fleming, vice president of Operations at Digital Defense Inc., a security firm in San Antonio that conducts audits for the financial industry, said of the survey finding that "things really are not that bad, maybe worse."

"These numbers are generous and probably reflect awareness of the typical Fortune 500-type company that [Ernst & Young] works with," said Fleming. "It only gets worse as the company size gets smaller."

"Until now, disaster recovery planning was mostly seen as an IT thing," said Paris. "So it's particularly surprising that so many CIOs would not have a plan in place." ■

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Sent: Monday, March 25, 2002 3:01 PM
To: Josh.Bernhit@fabrikam.com
Subject: SQL Server Benchmark

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VeriSign Targeted by Angry Site Owners

Customers voice a bevy of complaints over poor customer service, domain registration

BY JACUARUM VILAN

ANGRY WEB site owners are slamming VeriSign Inc. for a variety of reasons related to the company's domain name registration services.

The long list of complaints — many of which are chronicled on a Web site created to publicly air such grievances — includes problems with domain name renewals and transfers, misleading marketing tactics and poor customer service.

What appears to be provoking much of the immediate criticism is VeriSign's alleged practice of sending out misleading domain renewal notices to Web site owners whose domain names aren't even registered with the company.

It's not clear that such notices are really solicitations to potential customers, asking them to switch from their current registrars to VeriSign, said Hugh Brunner, president of Futur Networks Inc., an Internet consulting and Web services firm in Hartford, Conn.

People who pay VeriSign thinking that they're renewing their existing registrations find themselves switched from their registrars to VeriSign, often without realizing what they have done, Brunner said.

"They were trying to make me switch to a more expensive registration service without my understanding what was happening," said Arnold Kling, a Silver Lake, Md.-based owner of a noncommercial Web site.

Mountain View, Calif.-based VeriSign didn't respond to the

specific issues raised. But in a general response, a spokesman cited the sheer size of VeriSign's domain services, with 13 million VeriSign-registered domains and 26 million names in its global registers.

"No one company dominates this business, although we're proud to be the leader and accept the responsibility that comes with that," the spokesman said. But with more than 90 active registrars in the business, he noted, "we actively reach out to potential customers to make them aware of our services and value."

In any case, the complaints have to do with more than just misleading marketing, several Web site owners said.

Pulling the Plug

Tracy Bourgeois, a Web developer at SDB Inc., a Peterborough, N.H.-based provider of professional development resources for educators, is planning on sinking her organization's one remaining domain registered with VeriSign when it comes up for renewal. Her frustration stems from what she claims was a yearlong attempt to fully renew a domain through VeriSign. Two

What I can't accept is being lied to repeatedly, in being told that it would be fixed.

TRACY BOURGEOIS,
WEB DEVELOPER, SDB INC.

months after apparently completing and paying for a five-year renewal online, Bourgeois said, VeriSign shut down the domain name for failure to renew. The problem stemmed

from a credit card processing problem at VeriSign and resulted in a two-day outage.

"I can accept a processing mistake when my renewal payment was accepted — I paid for a five-year renewal and only received a two-year renewal — but when I can't accept it being lied to repeatedly, in being told that it would be fixed," Bourgeois said.

Ric Carter, president of NationalForeclosure.com in San Diego, said he's still upset over his unexplained loss two years ago of a domain name that was registered with VeriSign's Network Solutions Inc. subsidiary. A few months ago, Carter nearly lost ownership of another domain name when VeriSign acquired a company with which he had registered domains.

"It was a nightmare," Carter said. "If the same thing had happened with my main domain name, I would have been out of business."

Lawsuits Highlight PayPal's Growing Pains

Users say company is poorly managing its rapid expansion

BY DEBORAH RADCLIFF

Two class-action suits have been filed against PayPal Inc. in the past two months, accusing the online payment processor of having inaccessible customer service and a trigger-happy antifraud system that locks customers out of their own accounts with little recourse.

The lawsuits highlight customer grievances against the fast-growing company, that have recently shown up in thousands of postings on at least five PayPal complaint Web sites.

The most recent suit, filed in San Francisco Federal Court March 13, alleges that Palo Alto, Calif.-based PayPal's two-tiered customer service practices violate the Electronic Funds Transfer Act, which requires companies to provide a phone

number for customers to inquire about their transfers.

Under PayPal's terms-of-use agreements, nonpaying customers are required to seek help through the PayPal Web site and self-help links.

Those users make up about 80% of PayPal's customer base but only 10% of the transactions, according to a spokes-

person for the company.

But those few account holders are "important because they're needed to expand PayPal's buying and selling network of small-scale traders," said Avichai Iltis, research director at Gartner Inc. in Stamford, Conn.

"Our case is the accessibility to PayPal to its own customers who try to alert PayPal that someone's withdrawing money — out of their checking or credit card account. But the first problem they have is they can't figure out how to contact PayPal by telephone to report it," said Eric Gibbs, a partner at Girard Gibbs & the Barlowe LLC, the San Francisco-based law firm that filed the suit.

The case also addresses questions regarding whether accounts are being properly frozen, as well as the difficulties people have getting their money out of the frozen accounts, which is the basis for another class-action suit filed in February by Oakland, Calif.-based Jacoby & Meyers LLP at

Santa Clara County Superior Court in San Jose.

The Jacoby & Meyers suit alleges that PayPal's "phenomenal" increase in users, combined with its lack of operating experience, has led to serious flaws in its fraud detection and prevention systems. PayPal now boasts 13 million members, up from 10,000 members in 2000. The company currently performs \$200 million in transactions per day.

PayPal hasn't yet responded to either of the cases, but company spokesman Vince Solitto said the lawsuits are without merit. Solitto said that the company has hired 200 additional customer service representatives for its processing center in Omaha. He also pointed to PayPal's e-mail notification process and no-risk guarantee for transactions between PayPal members with addresses verified by the company. ▀

Quick Link

Send us what problems our Web hosting service, listed as VeriSign

www.computerworld.com/200204

Playing by the Rules

PayPal's fraud detection is based on rules-based fraud screens. The problem is that these screens:

- **CAN'T DETECT** subtle patterns quickly.
- **ONLY SEE ACTIVITY** experienced by the site using the system; they can't detect larger trends or see across merchant sites to identify potential fraud attacks.
- **CAN BE OVER-ENGINEERED**, making them too complicated to maintain.
- **NEED TO BE** updated regularly.

Quick Link

Read more about the issues that some PayPal customers have been having

www.computerworld.com/200204

■ To see what PayPal cited as potential risks and rewards in its IPO filing, visit www.computerworld.com/200204

VeriSign Targeted by Angry Site Owners

Customers voice a bevy of complaints over poor customer service, domain registration

BY JANKIMULU VILVAM

ANGRY WEB SITE owners are slamming VeriSign Inc. for a variety of domains related to the company's domain name registration services.

The long list of complaints — many of which are chronicled on a Web site created to publicly air such grievances — includes problems with domain name renewals and transfers, misleading marketing tactics and poor customer service.

What appears to be provoking much of the immediate criticism is VeriSign's alleged practice of sending out misleading domain renewal notices to Web site owners whose domain names aren't even registered with the company.

It's not clear that these notices are really solicitations to potential customers asking them to switch from their current registrars to VeriSign, said Hugh Brower, president of Futuristics Networks Inc., an Internet consulting and Web services firm in Hartford, Conn.

People who pay VeriSign thinking that they're renewing their existing registrations find themselves switched from their registrars to VeriSign, often without realizing what they have done, Brower said.

"They were trying to make me switch to a more expensive registration service without my understanding what was happening," said Arnold Kling, a Silver Lake, Md.-based owner of a noncommercial Web site.

Mountain View, Calif.-based VeriSign didn't respond to the

specific issues raised. But in a general response, a spokesman cited the sheer size of VeriSign's domain services, with 13 million VeriSign registered domains and 28 million names in its global registry.

"No one company dominates this business, although we've proud to be the leader and accept the responsibility that comes with that," the spokesman said. But with more than 90 active registrars in the business, he noted, "we actively reach out to potential cus-

tomers to make them aware of our services and value."

In any case, the complaints have to do with more than just misleading marketing, several Web site owners said.

Pulling the Plug

Tracy Bourgoine, a Web developer at SDE Inc., a Peterborough, N.H.-based provider of professional development resources for educators, is planning on yanking her organization's one remaining domain registered with VeriSign when it comes up for renewal.

Her frustration stems from what she claims was a zealous attempt to fully renew a domain through VeriSign. Two

What I can't accept is being lied to repeatedly, in being told that it would be fixed.

TRACY BOURGOINE,
WEB DEVELOPER, SDE INC.

months after apparently completing and paying for a five-year renewal online, Bourgoine said, VeriSign said the domain name for failure to renew. The problem stemmed

from a credit card processing problem at VeriSign and resulted in a two-day outage.

"I can accept a processing mistake when my renewal payment was accepted — I paid for a five-year renewal and only received a two-year renewal — but what I can't accept is being lied to repeatedly, in being told that it would be fixed," Bourgoine said.

Ric Carter, president of NationalForeclosures.com in San Diego, said he's still upset over his unexplained loss two years ago of a domain name that was registered with VeriSign's Network Solutions Inc. subsidiary. A few months ago, Carter nearly lost ownership of another domain name when VeriSign acquired a company with which he had registered domains.

"It was a nightmare," Carter said. "If the same thing had happened with any main domain name, I would have been out of business."

Lawsuits Highlight PayPal's Growing Pains

Users say company is poorly managing its rapid expansion

BY DEBORAH RADCLIFF

Two class-action suits have been filed against PayPal Inc. in the past two months, accusing the online payment processor of having inaccessible customer service and a trigger-happy antitraud system that locks customers out of their own accounts with little recourse.

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BRIEFS

Gartner Hits Oracle On Database Tactics

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SAP Extends Support On R/3 Applications

SAP AG announced plans to extend technical support on some releases of its R/3 business applications. The planned end of support for R/3 4.0C was pushed back by 12 months from the previous cutoff date of March 2005. SAP said several previous releases will be supported until the end of next year, after which users will have to pay an extra fee to get continued maintenance.

White House Seeks Web Site Reviews

The White House is ordering all federal agencies to review their Web sites in an attempt to root out "sensitive but not classified" information that could be used to threaten public safety. Agencies have until June 10 to report their findings to the U.S. Office of Homeland Security, the White House said.

Red Hat Targets Corporate Linux Users

Red Hat Inc. announced what it described as its first Linux operating system release aimed entirely at corporate applications. The Raleigh, N.C.-based company said its Linux Advanced Server software supports up to eight-processor systems and includes built-in clustering and security management tools.

Latest z/OS Release Focuses on Security

IBM's mainframe operating system adds support for digital certificates, new encryption standards

BY JAHUMBAR VILJAN

IBM may make security a core theme in the latest version of its z/OS mainframe operating system, which was announced last week.

With the release of z/OS 1.3, users of IBM's 64-bit zSeries mainframes now have the ability to issue and manage hundreds of thousands of digital certificates for authenticating user identities, according to the company.

The operating system also supports the new Advanced

Encryption Standard that replaced the Data Encryption Standard as the high-level standard for encrypting data.

Also supported on z/OS 1.3 is the Derived Unique Key Per Transaction standard, an encryption technique that's used with point-of-sale terminals.

Such enhancements are key to meeting the security requirements of large financial institutions and other organizations that use the power and scalability of IBM mainframes to host critical applications, said Linda Dostel, director of IBM's eSeries

er's security programs.

"The security needs of our customers have been greatly increasing because of e-business and the Internet," Dostel said.

Scalability and Security

For instance, Danske Bank in Copenhagen is currently using IBM-branded Windows NT servers to issue digital certificates to nearly 1 million of its business and personal customers. The bank plans to move this function to IBM's zSeries mainframes because of the greater scalability and security offered by the technology, said Claus Jensen, a vice president and head of systems architecture at Danske Bank.

AT A GLANCE
Security Plus

New features in z/OS Release 1 include:

- Public key infrastructure support
- Support for new encryption and crypto cryptographic standards
- Storage management enhancements
- Enhancements to Linux systems services
- Improvements in workload management capabilities

Native support for digital certificate technology on the z/OS means the bank has better control and autonomy when it comes to managing, adding, revising and removing certificates for customers, said Jensen. So far, the bank has used digital certificates only within its own network.

Danske Bank also plans to extend the network to external partners. As a result, "we are looking forward to having standardized and scalable digital certificate support integrated into the z/OS," Jensen said.

The new version of z/OS builds on the strong security features — such as the Resource Access Control Facility and Kerberos network authentication capabilities — that have long characterized IBM's mainframe hardware and software, said Bob Simko, president of International Technology Group in Los Altos, Calif.

"In that sense, this is an evolutionary release," he said.

Growing Demand

IBM is also responding to what it thinks will be a growing demand for more secure platforms as companies push into collaborative commerce and other Internet-based applications, said John Phelps, an analyst at Stamford, Conn.-based Gartner Inc.

"If you are going to use the zSeries as an e-commerce platform, these are the sort of things IBM believes are definitely going to be needed," Phelps said. ■

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Invensys Outsources IT to IBM in \$1B Deal

Agreement designed to support Invensys' reorganization plan

BY JAHUMBAR VILJAN

Invensys PLC, in London has outsourced IT operations in more than a dozen countries to IBM Global Services in a transaction valued at \$1 billion over the next 10 years.

IBM will provide infrastructure server management, application maintenance, help desk, Web hosting and desktop support services for more than 20,000 desktops and more than 2,000 large servers in about 400 Invensys locations worldwide.

"The aim is to standardize processes, introduce rigor around Invensys services and improve them, and to become more cost-effective," an Invensys spokesman said in an e-mail to Computerworld.

Invensys will retain a "small internal IT organization" to manage its relationship with IBM and to authorize and ap-

prove any changes to the scope of the contract, the spokesman added.

The outsourcing arrangement is being driven by Invensys' efforts to improve IT efficiencies as part of a wide-ranging reorganization announced in January, said Harry Spellman, an IBM client executive.

Invensys is shifting enterprise resource planning vendor Baan Co., which it owns, to a new division focused on production management technologies in industries such as oil and food manufacturing.

Invensys/IBM Deal

■ The contract is valued at \$1 billion over the next 10 years

■ IBM will provide hardware infrastructure and application management services for 20,000 desktops and 2,000 large servers in about 400 Invensys locations worldwide

■ About 800 operational IT staffers will be transferred to IBM under the arrangement

As part of the reorganization, Invensys last week also sold off a part of its energy management business and its flow control unit, which manufactures products such as valves.

Outsourcing to IBM in the midst of such sweeping changes should help Invensys keep its IT operations stable, said Bruce Caldwell, an analyst at Stamford, Conn.-based Gartner Inc. "It makes it easier for them to move to a more utility-like approach to computing services," he said.

IBM's experience in helping large corporations deal with IT-related issues during mergers and acquisitions is probably what landed it the contract over Plano, Texas-based Electronic Data Systems Corp., which was also competing for it, Caldwell said.

The transition to IBM managed services will begin immediately, Spellman said. About 600 IT employees from Invensys will be transferred to IBM starting next month in the U.S. and in June elsewhere. ■

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AT A GLANCE

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New Network at Core Of Casino Expansion

Mohegan Sun bets on CRM apps and monitoring tools to police slot machines

BY MICHAEL MESEAN

AS THE Mohegan Sun Casino readies itself for the final test of a new \$60 million IT infrastructure that it installed in stages during the past 18 months, the gaming resort isn't in a gambling mood.

Central to the infrastructure upgrade is a \$4 million network that's aimed at more closely monitoring the casino's slot machines and a new customer relationship management (CRM) system, said Jake Star, director of technology services at the Uncasville, Conn.-based company.

With a new 1,200-room hotel and convention center due to open later this month, Star said he expects the 20MB/s daily statistical data that currently winds its way through the network to double in size.

"After the slot machines, the monitoring system is probably the most important thing we've got in here," he said.

Star emphasized that every facet of the 5 million-square-foot entertainment complex, which includes a 10,000-seat arena, a shopping mall and the soon-to-be-added facilities, relies on the seamless performance of Mohegan Sun's network. He added that the stakes are too high for the IT staff to trust that the casino's network and applications will perform as advertised, creating the need to monitor everything. "Without it, we're doing this blind," Star said.

At the start of the project in November 2000, Star tapped software developed by Westford, Mass.-based NetScout Systems Inc. to monitor and report on the network and application performance.

Prior to the upgrade, Star had to contend with a network outage of at least one hour every two weeks. Since then, the casino hasn't suffered any core outages, and only one server switch has been down for a total of 45 seconds, he said.

"If you can't talk to our AS/400s, you're talking, just in net profits, about losing \$1 million a day," Star said. "We have to ensure uptime and fix things quickly if there's an outage."

The networked slot machines are the real cash cow, since they're able to constantly feed the CRM system with information about things such as when a

gambler began using a machine and how much money he spent.

The slots have been clustered and put on a serial connection back to the network. NetScout's tools, which cost \$500,000, monitor application performance as transactions pass through those connectors.

"On a Saturday night, we've got 10 transactions a second coming from those slot machines," Star said.

Mohegan Sun isn't the only organization looking at beefed-up network-monitoring capabilities as a key component of an IT overhaul.

For instance, Motorola Inc. in Schaumburg, Ill., plans to remap all of its customer-facing business processes during the next few years, according to Chief Technology Officer

Toby Redshaw. As the company's network grows and the applications become more independent, Redshaw said, he wants to make sure that Motorola IT managers have complete visibility into every facet of its network.

This becomes especially important because "you can now integrate your systems so that one request can touch off hundreds of other requests from different systems," said Wayne Aiello, vice president of e-business services at office supplier Corporate Express Inc. in Bloomfield, Colo.

Star said he's seeing the benefits of that real-time visibility today, especially on the application performance side.

He noted that the typical reaction of application vendors when problems occur is to blame the network.

"Now that we can track the application performance, the monitor essentially becomes the arbitrator," Star said. "We can show the vendor what's working and what isn't."

Playing a Big Hand

As part of its IT overhaul, Mohegan Sun also installed the following technologies:

- Five IBM AS/400 systems to replace the 10 IBM RS/6000 Unix servers that formerly ran the back-office operations
- Two T3 links used to replace its existing T1 connections
- A Cisco Catalyst 6505 core, distribution and server switching network plugged into 1,000 Cisco Catalyst 4000 cloud switches
- Gigabit Ethernet to every server with a minimum download of 100MB/sec. to every desktop, 20MB/sec. to each wiring closet and 80MB/sec. to 80MB/sec. to each core switch system
- Separate virtual LANs that isolate a new hotel and convention center to protect core systems
- A 6,500-network slot machine feeding into an integrated slot machine CRM system running on the AS/400s

Continued from page 1

J.D. Edwards

& Samuelian. Spectratk stopped work on the project in early 2000 and has had to continue using its legacy procurement and accounting systems, he said.

As part of its suit, the company is seeking to recover more than \$660,000 that it paid in licensing and service fees to Denver-based J.D. Edwards and Business Systems Specialties Inc., a systems integrator in Newport Beach, Calif.

Another user that sued J.D. Edwards, Park Hill, Okla.-based Greenleaf Nursery Co., last week said it turned off most of a OneWorld-based enterprise resource planning system in December and replaced it with a combination of homegrown code and applications developed by Microsoft Corp.'s Great Plains Business Solutions division.

Greenleaf's OneWorld applications went live in late 1999,

but company attorney Reece Morrell Jr. said the software didn't properly handle functions such as invoicing and inventory management. That forced Greenleaf to rely on manual processes and resulted in lost sales, spoiled inventory and an inability to collect accounts receivable, according to the company's lawsuit.

In the suit, which was filed last July, Greenleaf alleges breach of contract and seeks

\$40 million in project costs, damages and legal fees. The case is expected to go to arbitration this year, Morrell said.

OneWorld is J.D. Edwards' first product that ran on Windows and Unix servers in addition to IBM AS/400s. Other early adopters that have taken action against J.D. Edwards include Evans Industries Inc., a container maker in Fremont, La.; Supercorn Inc., a Fresno, Calif.-based computer parts distributor; and Donscol Marc Manufacturing Co., an Arlington, Texas-based maker of pet products and sporting goods.

Evans filed a suit in late 2000; J.D. Edwards said it has since been dismissed, but an official at Evans disputed that claim. Donscol requested arbitration proceedings last November, while Supercorn did the same in June 2000.

A J.D. Edwards spokesman said the software vendor believes it did nothing wrong and will vigorously defend that position. "The [OneWorld] solutions did not meet the expectations of these particular cus-

tomers for a wide range of reasons, and we do not believe it was because of the quality of J.D. Edwards' software," he said.

A spokesman at Business Systems Specialties declined to comment in detail on Spectratk's suit. "Our involvement or in the case is only because of alleged problems with the J.D. Edwards OneWorld product," he said. "Everything we did was appropriate."

Jim Shepherd, an analyst at AMR Research Inc. in Boston, said it's not surprising that OneWorld had some start-up problems because of the new technologies that were built into the software, such as its graphical user interface and distributed object architecture. But J.D. Edwards acknowledged the problems and fixed them, Shepherd said. He added that he considers OneWorld to now be "very stable and high quality" software.

Quick Link

To read more about J.D. Edwards' role in these proceedings, visit our Web site www.computerworld.com/72821

The system wasn't ready yet when [Spectratk] bought it.

WILLIAM MCDONNARD, ATTORNEY, PARTNER, MILLIKEN, CLARK, O'HARA & SAMUELIAN

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With a new 1,200-room hotel and convention center due to open later this month, Star said he expects the 26MB of daily statistical data that currently weaves its way through the network to double in size.

"After the slot machines, the monitoring system is probably the most important thing we've got here," he said.

Star emphasized that every facet of the 5 million-square-foot entertainment complex, which includes a 10,000-seat arena, a shopping mall and the soon-to-be-added facilities, relies on the seamless performance of Mohegan Sun's network. He added that the stakes are too high for the IT staff to trust that the casino's network and applications will perform as advertised, creating the need to monitor everything. "Without it, we're doing this blind," Star said.

At the start of the project in November 2000, Star tapped software developed by Westford, Mass.-based NetScout Systems Inc. to monitor and report on the network and application performance.

Prior to the upgrade, Star had to contend with a network outage of at least one hour every two weeks. Since then, the casino hasn't suffered any core outages, and only one server switch has been down for a total of 45 seconds, he said.

"If you can't talk to our AS/400s, you're talking, just in net profits, about losing \$1 million a day," Star said. "We have to ensure uptime and fix things quickly if there's an outage."

The networked slot machines are the real cash cow, since they're able to constantly feed the CRM system with information about things such as when a

gambler began using a machine and how much money he spent.

The slots have been clustered and put on a serial connection back to the network. NetScout's tools, which cost \$500,000, monitor application performance as transactions pass through those connectors.

"On a Saturday night, we've got 10 transactions a second coming from those slot machines," Star said.

Mohegan Sun isn't the only organization looking at beefed-up network monitoring capabilities as a key component of an IT overhaul.

For instance, Motorola Inc. in Schaumburg, Ill., plans to remap all of its customer-facing business processes during the next few years, according to Chief Technology Officer

Toby Redshaw. As the company's network grows and the applications become more interdependent, Redshaw said, he wants to make sure that Motorola IT managers have complete visibility into every facet of its network.

This becomes especially important because "you can now integrate your systems so that one request can touch off hundreds of other requests from different systems," said Wayne Aiello, vice president of e-business services at office supplier Corporate Express Inc. in Broomfield, Colo.

Star said he's seeing the benefits of that real-time visibility today, especially on the application performance side.

He noted that the typical reaction of application vendors when problems occur is to blame the network.

"Now that we can track the application performance, the monitor essentially becomes the arbitrator," Star said. "We can show the vendor what's working and what isn't." ■

Continued from page 1

J.D. Edwards

& Samuelian. Spectratak stopped work on the project in early 2000 and has had to continue using its legacy procurement and accounting systems, he said.

As part of its suit, the company is seeking to recover more than \$660,000 that it paid in licensing and service fees to Denver-based J.D. Edwards and Business Systems Specialties Inc., a systems integrator in Newport Beach, Calif.

Another user that sued J.D. Edwards, Park Hill, Okla.-based Greenleaf Nursery Co., last week said it turned off most of a OneWorld-based enterprise resource planning system in December and replaced it with a combination of home-grown code and applications developed by Microsoft Corp.'s Great Plains Business Solutions division.

Greenleaf's OneWorld applications went live in late 1999,

but company attorney Reece Morrel Jr. said the software didn't properly handle functions such as invoicing and inventory management. That forced Greenleaf to rely on manual processes and resulted in lost sales, spoiled inventory and an inability to collect accounts receivable, according to the company's lawsuit.

In the suit, which was filed last July, Greenleaf alleges breach of contract and seeks

\$40 million in project costs, damages and legal fees. The case is expected to go to arbitration this year, Morrel said.

OneWorld was J.D. Edwards' first product that ran on Windows and Unix servers in addition to IBM AS/400s. Other early adopters that have taken action against J.D. Edwards include Evans Industries Inc., a container maker in Harvey, La.; Supercorn Inc., a Fremont, Calif.-based computer parts distributor; and Dookool Manufacturing Co., an Arlington, Texas-based maker of pet products and sporting goods.

Evans filed a suit in late 2000; J.D. Edwards said it has since been dismissed, but an official at Evans disputed that claim. Dookool requested arbitration proceedings last November, while Supercorn did the same in June 2000.

A J.D. Edwards spokesman said the software vendor believes it did nothing wrong and will vigorously defend that position. "[The OneWorld] solutions did not meet the expectations of these particular cus-

tomers for a wide range of reasons, and we do not believe it was because of the quality of J.D. Edwards' software," he said.

A spokesman at Business Systems Specialties declined to comment in detail on Spectratak's suit. "Our involvement in the case is only because of alleged problems with the J.D. Edwards OneWorld product," he said. "Everything we did was appropriate."

Jim Shepherd, an analyst at AMR Research Inc. in Boston, said it's not surprising that OneWorld had some start-up problems because of the new technologies that were built into the software, such as its graphical user interface and distributed object architecture. But J.D. Edwards acknowledged the problems and fixed them, Shepherd said. He added that he considers OneWorld to now be "very stable and high quality" software. ■

Quick Link

To read more about J.D. Edwards' arbitration proceedings, visit our Web site: www.computerworld.com/p77777

The system wasn't ready yet when [Spectratak] bought it.

WILLIAM MCINTOSH, ATTORNEY.
PARTNER, MILLER, CLARK,
& HARRA A SAMUELIAN

CONSTRUCTIVE DISRUPTION

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- WIRELESS INFRASTRUCTURE ISSUES
- A LOOK INSIDE THE LABS

- SOFTWARE AS A SERVICE
- DISASTER RECOVERY BEST PRACTICES
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Dr. John Seely Brown
Chief Scientist
Xerox Corporation



Dr. Eric S. Schmidt
Chairman
The Internet
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Patrick Gallagher
VP & CTO
Intel Corporation



Neal Khosla
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John Anderson | Senior Director of Advanced Technology Planning, EDS
Randall Archer | CTO and co-founder, MANT Commerce
Jan Baid | CTO, Chief Grid Strategist & Chief Business Architect, Platform Computing and President, NPI, Inc.
Karel Back | Director, Three Rivers Institute
Marc Bariloff | Chairman & Founder, Teleforce.com
Rajeev Bhargava | CTO, Epsom
John Blair | Co-founder, President, & CTO, Kovance
Grady Branch | Chief Scientist, National Software
Jon Bonak | Online Information Technology Architect, Sun Microsystems
Tim Bray | Founder, Anarchy Systems
Betsy Briggs | CTO, Wheelhouse
Bill Brungner | CTO, Calix
Dave Burkhart | Technology Vicepresident, Yahoo!Internet.com
Mike Davis | CTO & Executive VP, Encanto Systems
Hossein Eslami-Bach | CTO, AIST
and President, AIST Labs
Robert "Bud" Flannigan | CTO, Avance Software Services, Avance
Craig Gilson | Member of Technical Staff, Cisco
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Alan Harbitter | CTO, PFC Solutions
Rick Hayes-Roth | CTO, Software Solutions, Hewlett-Packard
Wade Hennessey | CTO & VP of Engineering, Kordia
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Tim Humeau, Ph.D. | CTO, Executive VP of Usability Development, & Co-Founder, Usability Jack Inc | Senior VP & CTO, Intermix
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BRIEFS

Microsoft Fixes \$18 Financial Miscue

Microsoft Corp. filed amended financial statements for the first half of its current fiscal year, saying it had understated the amount of unearned revenue on its books by almost \$1 billion. Unearned revenue is a balance-sheet liability used to account for money received in return for products and services that have yet to be delivered. Microsoft attributed the mistake to a clerical error.

Optical Vendor Ciena Makes More Job Cuts

Lithium, Md.-based optical networking vendor Ciena Corp. announced its third round of costcuts since November, saying that it had cut 850 employees because of continued weak demand for its telecommunications equipment. The new layoffs lowered Ciena's workforce by 22% and followed a \$70.6 million loss in the company's first quarter ended Jan. 31.

Covad Reaps Profit From Debt Write-offs

Covad Communications Group Inc., which emerged from bankruptcy protection in December, reported a net profit of \$998.5 million for last year's fourth quarter due to a \$1 billion gain related to debt write-offs. The Santa Clara, Calif.-based Digital Subscriber Line service provider is ready to start the quarter on revenue of \$89.5 million.

Short Takes

HEWLETT-PACKARD CO. completed a planned acquisition of INDIGO NV, a Mountain View, Calif.-based maker of digital color printing presses for commercial and industrial users. . . . Mountain Labs, N.J.-based COMPUTER HORIZONS Corp. spun off its Princeton, N.J.-based PRINCETON SOFTTECH Inc. data archiving subsidiary.

Sun, HP Look to Boost Low-end Unix Servers

Rival sub-\$1,000 systems aimed at Web applications, branch office processing

BY TODD R. WEISS

SUN MICROSYSTEMS Inc. and Hewlett-Packard Co. are taking their battle for Unix server sales to a new low, in the form of entry-level systems that start at less than \$1,000 and are aimed at uses such as running Web sites and e-mail systems.

Sun last month unveiled an upgraded version of its sub-\$1,000 server, adding a CD-ROM drive and the enterprise edition of its iPlanet Web Server software. The single-processor server has a base price of \$995, the same as the original model that Sun shipped early last year.

The move by Sun followed HP's introduction earlier in March of a low-end Unix server that also starts at \$995. HP said the system is priced as much as 58% lower than its previous entry-level boxes.

There are some notable differences between the rival rack-mounted systems. Sun's server, formerly called the Netra XI and now renamed the Sun Fire V100, comes standard with a 40GB disk drive in addition to the CD-ROM drive. Sun officials said the base system is ready to install and use as is.

HP's rp2430 doesn't include a disk drive as a standard feature, and the company said it expects typical configurations to cost about \$1,500. But a dual-processor model of the server offers greater expansion capabilities than Sun does.

New Opportunities

The low-end systems give HP and Sun a chance to tap into a part of the server business that has relatively high volumes, said Jean Borzeman, an analyst at IDC in Framingham, Mass. "I'm not saying it's a

mass market," Borzeman said. But especially for Sun, she added, the low prices are designed to help it compete against Windows systems built around Intel Corp. chips.

Laura Finkelstein, group manager for Sun's entry-level servers, said the Sun Fire V100 is aimed primarily at small and medium-size companies that want to use a Unix server to manage e-mail, proxy caching, directory services and other Web infrastructure needs.

Companies that need an application server for distributed business units and branch offices are another target market for the low-end Unix machines, said Kate O'Neill, a product manager at HP.

Radianz Inc., a New York-based extranet and Web hosting provider, uses about 100 Sun Netra XI servers to transmit real-time stock and bond prices to financial services firms over a global network.

Ken Chin, director of middleware services at Radianz, said he plans to begin adding Sun Fire V100 boxes to the network in the near future.

Radianz chose the Sun

Network Associates Faces SEC Accounting Probe

But investigation shouldn't hamper turnaround effort

BY JAIKUMAR VIJAYAN

Network Associates Inc., which is trying to rebound from a series of losses, last week disclosed that the Securities and Exchange Commission (SEC) has launched an investigation into the accounting procedures used by the security software vendor during 2000.

Security analysts said they don't expect the SEC probe to derail Network Associates' comeback efforts. "The current management team has spent the last 15 months or so putting a lot of their problems behind them," said Eric Heumindinger, an analyst at Aberdeen Group Inc. in Boston.

But the investigation did prompt the Santa Clara, Calif.-based company to postpone a bid to buy full ownership of

antivirus software developer McAfee.com Corp. Network Associates holds a 75% stake in McAfee.com and planned last week to file a formal offer to buy the remaining publicly held shares of the Sunnyvale, Calif.-based company.

But Network Associates said it's delaying the offer until "a later date" because of the SEC investigation. Meanwhile, McAfee.com rejected the bid, saying the stock-swap deal would

Internal Changes

Network Associates made the following moves on part of its ongoing reorganization:

PUT TO PUP encryption software into maintenance mode after failing to find a buyer for the software.

SOLD OFF its Quantum brand and what private network technology to Secure Computing Co.

LAID OFF 250 employees who did work related to the PUP and Quantum product lines.

Server Dealings

The new servers include the following technology:

Sun Fire V100

CPU: 500-MHz
UltraSPARC IIe

Memory: 128MB to 512MB

Disk storage: 4GB to 8GB

HP rp2430

CPU: 650-MHz PA-7000

Memory: 128MB to 2GB

Disk storage: Up to 144GB

servers over Windows-based systems because most of its customers use Unix hardware themselves. "Wall Street has primarily standardized on Unix as being more stable and manageable," Chin said. ■

be "financially inadequate."

Network Associates CEO George Semmenak said during a teleconference that the SEC's investigation appears to involve accounting issues related to events that took place in late 2000, prior to his arrival at the company early last year.

On Dec. 26, 2000, Network Associates announced the resignations of its CEO, president and chief financial officer and said it would make sweeping changes in its revenue recognition policy. It also warned that sales in that year's fourth quarter would be well below expectations, starting a string of five straight quarterly losses.

Since then, the company has taken a series of restructuring steps aimed at cutting costs (see box). Semmenak last week said he doesn't expect the SEC probe "to have any effect on our day-to-day business, our current customers or future growth opportunities."

Chris Christiantzen, an analyst at Framingham, Mass.-based IDC, said Network Associates has made a "pretty dramatic" turnaround in terms of its products and sales. "My guess is that this investigation is more about the past [than the present]," he said. ■

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Short Takes

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BY JAHNARUL HAQUE

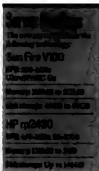
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PATRICIA KEEFE

Pins and Needles

THERE'S A LOT OF TOE-TAPPING and pent-up impatience in the IT community, and I'm not talking about the people in the Northeast who are still waiting for winter or those in the Pacific Northwest waiting for it to end.

We're all stuck in a holding pattern right now,

even those of us who aren't, as of this moment, trapped in some godforsaken airport watching the hours tick by. There are bigger delays to worry about and smaller, but significant, changes to keep an eye on.

Let the pundit talk about the so-called invisible recession. Most of us are still waiting for the economy to pick itself up so business (and job offers) can start rolling in.

We're waiting to see the start of the future for a handful of the industry's leading vendors:

- How will new IBM CEO Sam Palmisano build on the foundation left by Lou Gerstner? As a proponent of Linux, how far will he integrate the youthful operating system into IBM's venerable product line?
- Will Microsoft wriggle out from under the antitrust case with its strategies and trademark approach to business intent? Can it come up with enough of an incentive to cut through the inertia surrounding its more recent product releases? Can the company get the security monkey off its back?
- How long will it take Hewlett-Packard and Compaq to detail their merged product plans? What's staying and what's going? It's pins and needles time.

We're waiting for clarity on murky pricing plans. Will Oracle, struggling to find revenue, stick it to some customers by trying to impose extraneous licensing fees? Researchers at Gartner and Meta Group seem to think so — both have issued alerts to



Patricia Keefe is a freelance writer at Computerworld. You can contact her at patricia.keefe@computerworld.com.

customers. There is also concern brewing about some mainframe software vendors not supporting usage-based pricing models. And users have complained about Microsoft's new licensing fees.

We're waiting for security to be taken seriously. An Ernst & Young global information security survey of 459 CIOs and IT directors is startling to

the extent that it shows the continued irresponsible approach these businesses take toward defending against and investigating security breaches (see story, page 10).

We're waiting for standards and security in the wireless arena so we can get on with next-generation networking.

Some of this will sort itself out in

good time, but users can help provide direction or even speed things along. Here's how:

- Realize that flat budgets put you in the driver's seat. Vendors are mumbling about longer sales cycles, allocation of available dollars and changes in how users are buying services and products. Press for discounts and deploy big projects in small chunks. It's a smart approach, making sure that ROI appears every step of the way; the milestones are met and the vendors are accountable and involved.
 - Don't let core vendors off the hook. Demand strategic blueprints and concrete product and support plans. Insist that they spell out the ramifications of new pricing plans.
 - Contribute to and collaborate on standards campaigns. It'll help drive the process in the direction you want it to go.
 - Quit screwing around when it comes to security. It's a threat to your systems, your data, your company, your customers and, in some cases, your country.
 - Start planning for postrecession project management and staffing challenges.
- That ought to relieve a few of the pins and needles while you wait for the future to get here. ■

PIMM FOX

Treat Staff Royally in Down Times

THE CORE OF YOUR IT operations is people.

You're to be forgiven if you've occasionally imagined that integration efforts, data centers, storage, Web services or even software held first place in the hierarchy of what makes or breaks IT performance. After all, that's what has gotten most of your attention.

It's critical, however, that you don't lose sight of your core, especially when we're in an economic slump, during which IT professionals have watched colleagues depart, projects get dumped and companies retrench.

These are the times that will test your true talents as an IT leader. "Managers forget in down times they need to look at the workforce that is left," says Milan Moravec, CEO of Moravec and Associates, a business consulting firm. "Most managers think once they're laid people off and cut the budget, they can wash their hands of the situation and breathe a sigh of relief."

That would be a big mistake, says Moravec, because most employees don't view layoffs as part of some larger economic cycle. "The employees who are left remember the pain of their colleagues and want to blame management for pink slips and the poor business decisions made during heady times," he says.

Indeed, while many managers assume that the employees still on the payroll will remain loyal and grateful, a better economy could encourage many survivors to jump at the first



Milan Moravec is president and CEO of Moravec and Associates, a business consulting firm. You can contact him at milan.moravec@moravec.com.



Quick Link

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**White
Paper**



**User Survival Guide
to
Network Storage Management**

COMPUTERWORLD

WHEN FAILURE IS NOT AN OPTION

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User Survival Guide

to

Network Storage Management

Forget all of the marketing hype about networked storage and the silver bullet it provides in terms of storage cost reduction. The simple fact is that without effective management, networked storage topologies offer no more cost savings than the traditional server-attached topologies they seek to replace.

Without management, networked storage technologies like network attached storage (NAS) and storage area networks (SANs) may actually contribute to the total cost of ownership (TCO) for a company's storage infrastructure. While these technolo-

gies may indeed enable storage capacity to scale non-disruptively in the face of burgeoning data, more often than not, increased capacity translates simply

to a need to hire more staff to administer and "groom" the storage platform. Moreover, in an unmanaged

networked storage environment, the increased accessibility of data afforded by the topology may well translate to increased opportunity for data corruption and increased need for administrator oversight and intervention.

When presented with projections from Framingham, Mass.-based market research firm International Data Corp. of an anticipated 67% to 68% increase in networked storage technology adoption through 2004, long-time industry watcher and DiskTrend President James Porter observes that NAS and SAN would not displace, but would more likely co-exist with server attached storage and internal server disk for at least a



decade. "It isn't as though companies fielding networked storage solutions are ripping out their existing investment in storage technology," Porter says.

William
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Independent
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Author

User Survival Guide

to

Network Storage Management

Forget all of the marketing hype about networked storage and the silver bullet it provides in terms of storage cost reduction. The simple fact is that without effective management, networked storage topologies offer no more cost savings than the traditional server-attached topologies they seek to replace.

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Abstract

As users strive to control their exponentially expanding data, the need for heterogeneous storage management is more important than ever for the storage networking industry. This situation has created both an opportunity and a challenge for vendors that must work together on the creation of standards if they are to ultimately provide the full value of their products. This Computerworld White Paper, written by noted writer and industry consultant Jon William Toigo, takes a look at current data management solutions, suggests interim user strategies, and lays the groundwork for long-term implementation. It also features practical case studies.

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By Jon William
Toigo,
Independent
Consultant and
Author

Porter's observation alluded to what has become a nagging industry truth: today, networked storage acquisitions have not simplified storage management, but rather have added greater complexity—and cost—by multiplying the number and type of “targets” that the typical enterprise IT organization must manage.

Storage is the last bastion of enterprise information technology that lacks either open or de facto management standards. In the absence of standards that can be used to manage the heterogeneous components and processes that comprise a typical storage infrastructure, companies continue to struggle with the costly challenge of managing their mission-critical data armed only with the 21st Century's equivalent of stone knives and throwing sticks.

Is a solution to this problem waiting in the wings? The answer is a highly qualified “Maybe.”

The current state of storage management tools

Storage administrators often use the metaphor of a quiver of arrows to describe the tools they use to perform their work. They are referring to an assortment of “point management” software products, each of which is designed to perform a certain discrete task. These point solutions are often limited to a single vendor's storage component.

Point management tools have proliferated over the past several years to address a host of specific tasks—from device discovery to disk tuning to backup and restore functions. For the most part, storage administrators

have kludged together what they feel are best of breed products in each functional area; they then carry these tools with them as they travel from one server or storage platform to the next.

According to administrators, there are problems with the point management tool approach. For one thing, there are so many products that it's difficult to maintain a current knowledge of the capabilities and limita-

Forget the marketing hype about networked storage and the silver bullet it provides in terms of cost reduction. Without effective management, networked storage topologies offer no cost savings over the traditional server-attached topologies they seek to replace.

tions of each, or to ensure that the best tools for the job are identified and used. For another, using a multiplicity of products carries a potentially huge cost in terms of licensing, version management, and knowledge transfer.

A glimmer of hope was seen two to three years ago, when some of the larger storage management software

vendors began gobbling up some of the smaller fry and repackaging the point products as storage resource management (SRM) software suites. However, the results of this acquisitions frenzy, according to many storage managers, have been somewhat disappointing. According to corporate IT managers, many of the SRM suites introduced to market, despite the claims of their marketing brochures, are poorly integrated and include tools that are either not best in class or are simply irrelevant with in the administrator's particular storage product mix.

Ideally, users say, storage management software would enable the policy-based automation of management tasks. That way, fewer administrators would be required to manage a growing storage pool. Automated management has been the goal of another class of storage management product vendors, those offering “management frameworks.”

Framework products use agent-based software to monitor storage infrastructure components, and also to return status or event messages to a centralized monitoring console. Ultimately, the goal of most framework vendors is to have their products do more than simply monitor for events and alarms. These vendors want to enable their products to perform most storage management tasks as well—with or without the participation of the console operator. At a minimum, these vendors want users to be able to launch point tools or SRM suites from the console, effectively centralizing the management task. Ideally, they want to instrument

storage so that a given action will be initiated automatically in software when a particular "out of threshold" event or constellation of events is detected.

When such a centralized and intelligent management approach will come to market is anyone's guess. Currently, the bulk of the programming resources within most framework vendor development shops are dedicated full-time to writing device drivers, according to industry insiders. They must ensure that their product maintains its capability to monitor the myriad new releases of host-bus adapters, array controllers, and SAN switches and hubs that are introduced by storage vendors each year.

Moreover, they must spend substantial money, time, and effort in order to cultivate good relations with storage hardware vendors so that they'll continue to enjoy access to application programming interfaces (APIs), command line interfaces, and self-articulated Web pages with which the vendors instrument their platforms for management. Under these circumstances, finding additional programming resources to write automation routines is a major challenge.

Finally in this taxonomy of storage management products, it's worth mentioning that a new category of management has been introduced very recently - in the past several months. This new class of storage management software seeks to manage storage as a service, complete with service-level agreement (SLA) monitoring and reporting, as well as

back end links to customer relationship management (CRM) and accounting systems.

Vendors in this space tend to be the early storage service providers (SSPs) that appeared in the late 1990s, but found little market for the concept of delivering storage as a service. Prospective clients were less interested in these vendors' services than they were in the software the vendors had developed to manage, measure,



and bill clients. The SSPs have mutated into software vendors and are bringing their storage SLA reporting tools to market, creating yet another tier of storage management software.

The crux of the matter

Though it is rarely perceived, the core problem confronting storage

administrators in their quest for effective storage management is the industry's resistance to the development of a common management standard. Some support the Simple Network Management Protocol (SNMP), which is used to monitor network devices such as LAN switches and routers. But this is by no means a universal characteristic.

For the most part, the products of a particular storage vendor are instrumented for management using proprietary software tools. Most vendors leverage their proprietary management schemes to sell more of their own products. The message from each vendor is that tremendous TCO advantages can be realized by the IT shop that buys that vendor's products alone.

In organizations that decide to standardize on the platform of a single vendor and to field a homogeneous storage infrastructure, storage TCO improvements based on reduced labor costs are, in fact, possible. However, in most enterprises, the heterogeneity of the storage infrastructure can be discerned by a quick glance at the multi-colored racks and cabinets in the data center and in business unit equipment rooms. Often, homogeneous storage translates to a vendor lock-in - an uncomfortable proposition to many IT managers, CIOs, and CTOs, especially given the lack of a clear industry leader in the storage market. The old dictum "no one ever gets fired for buying IBM" has found no equivalent in the storage space.

In many shops, heterogeneous storage is guaranteed by the "tactical"



- a polite way of saying "knee-jerk" - manner in which storage products are acquired. Unaided by effective storage management tools, data is often poorly groomed, capacity utilization is often poorly tracked, and proactive or strategic product acquisition decision-making falls prey to reactive seat-of-the-pants purchasing in response to "Disk Full" error messages.

The resulting infrastructure is hard to manage without a common management standard. However, vendors lack motivation to commoditize their storage offerings by cooperating meaningfully with any standards-making effort, especially given a lack of a compelling business reason for doing so. IT organizations just aren't clamoring for a common storage management solution, according to one

vendor spokesperson. Until they do, the Balkanized world of storage management will remain much as it is today.

Coping with disarray

There have indeed been multiple industry initiatives aimed at introducing storage management standards. One that has received lip service (but little action by vendors) is the Common Information Model (CIM) effort spearheaded by the Storage Networking Industry Association (SNIA). Championed by Mark Carlson, an SNIA director who works on storage management tools at Sun Microsystems Inc. for a living, CIM seeks to describe all storage components as object. CIM proponents say this is a first step in instrumenting heterogeneous storage for common management.

CIM has reared its head before, in the desktop management arena. There it encountered some of the same results as current storage CIM efforts. Vendors agreed that management was needed, but rebelled against the notion of any one-size-fits-all standard that could capture the unique features and functions that differentiated their products from those of competitors.

Operating system vendors, including Microsoft Corp. and Sun, have instrumented their products for CIM management, so storage that is still "owned" by servers can be monitored and managed to some extent by CIM. However, the thrust of the networked storage effort is to divorce storage from direct attachment with servers, and this means storage product ven-

dors must implement CIM on their own platforms. To date, no vendors have done so.

The challenge to CIM comes in the form of EMC Corp.'s AutoSIS initiative. Last fall, the storage vendor began to introduce a set of technologies, built on its proprietary products, that are intended to enable cross-platform storage management. Many people who are involved in the CIM effort perceived the AutoSIS announcement as a shot across their bow - an effort by EMC to impose a de facto standard (à la Microsoft in the desktop world) on the management of storage.

EMC proposes an API middleware layer, called WideSky, that vendors may elect to use to interface their products to EMC's proprietary management software console,

Point management tools have proliferated to address specific tasks. Most storage administrators have kludged together what they feel are best-of-breed products in each functional area; they then carry these tools with them as they travel from one server or storage platform to the next.

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In most enterprises, the heterogeneity of the infrastructure can be discerned by a quick glance at the multi-colored racks in the data center. Too often, homogeneous storage translates to vendor lock-in, an uncomfortable proposition to many IT managers given the lack of a clear industry leader.

ControlCenter/Open Edition. What gives legs to this approach is EMC's prominent position in the market, smaller storage equipment or software vendors seeking to sell product into an EMC account may find it useful to be able to claim that their technology can be managed by the management software already used by the customer.

The idea has attracted the interest of many storage players, including Compuq Computer Corp., on the one hand. On the other, it has also created a furious cry of "Foul!" from many of EMC's leading storage competitors. These detractors, including Hitachi Data Systems and IBM, are now rallying around SNA and CIM, which they view as open alternatives to EMC's "Open Edition."

In the final analysis, the EMC uni-

tative may bring about a common management standard - whether a de facto standard imposed by an industry leader, or an open standard reluctantly agreed to by storage vendors unwilling to give EMC bragging rights for having solved the storage dilemma.

Until a standard does arrive, enterprises must cope with burgeoning data growth and shrinking IT budgets using a kludge of point, SRM, and framework management products. Networked storage, SANs in particular, are not making things any easier.

Current generation SANs, which are based on Fibre Channel technology, do not provide IT organizations with the means to support in-band management, or "management-in-the-wire." Such functionality was deliberately excluded by the people who invented Fibre Channel at IBM about a decade ago in order to preserve the maximum amount of bandwidth for moving data and SCSI commands from server to storage platform. This is an issue the Fibre Channel Industry Association is

working to resolve by adding "Fabric Services" into the protocol.

At the same time, two camps of vendors - Cisco Systems Inc. and Adaptec Inc. on the one hand, and Hitachi Data Systems, Nubus Corp., and Alacritch Inc. on the other - announced in January that they will introduce a new IP-based version of SAN technology to market before year's end. These new IP SANs, which will use an early specification for iSCSI until the Internet Engineering Task Force completes work on a final version of the standard, will hit the streets about two years earlier than analyses predicted. Because these SANs are based on a protocol that uses IP networking, they will also be manageable via the same SNMP that has been used for years in the LAN space.

It remains to be seen which protocols and management schemes will come to the fore as industry standards. Until a leader is established, the cost of ownership of storage will continue to accelerate in all but the most homogeneous storage infrastructures. ■



Bank Goes Global, Finds 24/7 Solution

CA's BrightStor EB helps financial institution meet new demands

Founded in 1979, Hemisphere National Bank (HNB) began as a local financial institution dedicated to serving the needs of the South Florida community. Building steadily on its reputation for customer service and commitment, HNB was soon ready to expand beyond its original Miami branch; the bank opened additional Miami branches and expanded to Coral Gables and Aventura, Fla. HNB quickly diversified and began to offer a wide array of individual and business services, from Internet banking to commercial lending and credit card processing.

Managing data growth

In 1998, the management of HNB decided to broaden its services again to reach an international clientele. With the establishment of its International Division, HNB added a series of new offerings, including pre- and post-export trade financing. The breadth of these new products and the exponential increase in data that they generated made it necessary for HNB to dramatically increase its storage capabilities as well.

The IT management team at HNB decided to deploy a network-attached storage (NAS) system to meet this challenge, and evaluated numerous backup-and-restore solutions. The team determined that only Computer Associates International

Inc.'s BrightStor Enterprise Backup (EB) was robust enough to handle the storage management tasks for its global operations. Working with Aspedient Technologies, a CA-certified managed service provider, HNB implemented BrightStor EB in less than three weeks.

Addressing e-business demands

HNB viewed the ability to back up and restore growing volumes of data within a shrinking backup window as its most critical objective. "Providing high data availability for HNB's expanding network of international clients was essential," says Tony Silva, co-CEO at Aspedient Technologies. "The unsurpassed backup speeds of BrightStor EB have enabled HNB to offer its global customers unimpeded access to data

The bank viewed the ability to back up and restore growing volumes of data in a shrinking backup window as critical. Providing high availability for a network of international clients was deemed essential.

and e-banking services 24 hours a day, 365 days a year."

Maximum uptime has become increasingly critical as HNB continues to expand its e-banking services. In 2001, HNB acquired the assets of a competing bank with a global customer base, extending the demands on its storage infrastructure across multiple time zones. "Hemisphere National Bank has become an institution without borders, and this makes performance and data availability key to our long-term success," says Miguel Morera, HNB's CIO. "The ability of BrightStor EB to deliver a clean, central solution for high-speed backup has enabled us to take on these new 24/7 markets with confidence."

The speed and reliability of BrightStor EB aren't the only benefits HNB is leveraging to further its expansion into new markets. "Its centralized administration and reporting capabilities enable us to proactively manage the backup-and-restore process, reducing the burden on personnel," Silva says.

From the BrightStor console, members of the IT team can view reports about completed backup jobs, monitor the performance of HNB's storage servers, and evaluate the disk capacity of its DASDs. The IT group at the bank says BrightStor EB is a significant part of their successful growth.

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Making News with NAS

USA Today chooses Network Appliance solution for redundancy, ease of use

Darrell Griffith is senior infrastructure architect within USA Today's Infrastructure Technology Group. He played a critical role in the newspaper's implementation of Network Appliance Inc.'s filer technology and continues to monitor the NetApp solution as it is extended and expanded. Griffith recently spoke with Bruce Hoard, executive editor of *Storage Networking World Online* (www.sawonline.com), about the challenges and benefits associated with network attached storage (NAS), data replication, and multi-protocol support.

Q: Describe the storage problems you had before implementing your Network Appliance solution.

Griffith: We had no comprehensive, large enterprise-grade storage solution on the landscape here when we began a serious technology investigation toward the end of 2000. What we did have was a lot of what we call single-channel storage solutions and vertical applications. So we had to find a comprehensive enterprise-grade solution that worked well with our existing infrastructure and complemented our core competencies from both technology and skill-set perspectives.

Q: Describe the existing infrastructure you had to work with.

Griffith: We've got a lot of Wintel type stuff - our Windows 2000 and XP server base. We also have our share of AIX and Solaris. We have no AS/400, midrange, or big iron. Most of what we have is Unix or a standard Microsoft type environment. We have some pretty powerful RS/6000 and AIX-based implementations for a lot of our publishing systems.

Q: What process did you follow in selecting a storage vendor, and how long did it take?

Griffith: It was actually straightforward. Three or four of us were cobbled into an ad hoc task force during the middle to end of 2000, and we basically set about reviewing the industry. First and foremost, we assessed our current architectures and tried to understand not just the hosting platforms themselves, but also the vertical applications.

We could find certain fits that would work with RS/6000s, but those machines may have been running a third-party application that wouldn't accommodate certain types of storage solutions. So we spoke with a bunch of different vendors and did informal research.

We also attended a very beneficial Storage Networking World conference in Orlando that winter. That's really where, after we'd called all our preliminary information, we got a much better feel for industry directions. One of the big issues I had with taking a particular SAN approach was that they kept wanting me to reinvent something that was pre-existing, that being the network.

Q: What happened after the Storage Networking World show?

Griffith: We basically came away looking at a couple of big players, including Network Appliance, in the NAS market. We compared them to a bunch of other NAS competitors. Our decision to go with Network Appliance was really more philosophical than it was based on cutting-edge technology. NetApp seemed to be the best entrenched, and they seemed to be the company with the most proven commitment through their R&D and their technology. They had a lot of strategic initiatives with Microsoft as well as a clear commitment to the Unix standards, which was good for us. It was a case of looking at a business partnership for the long haul in terms of robust technology and where it was going.

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Q: What Network Appliance product or products did you buy?

Griffith: We ended up going with the filers, and in particular the cluster filers. Media and data availability was one of our strictest criteria, so we bought a pair of F840 clusters about a year and a half ago. We put one at our nationwide headquarters in McLean, Va., and the second over a very redundant WAN link at a disaster recovery location at our White Oak, Md., location in the event of a failure in McLean. Speed was important – but the bottom line is that data has to be available.

Q: What was your vision for how the products would be implemented, and the resulting benefits?

Griffith: We tinkered with a lower end solution first. We were still fairly cautious and experimental with NetApp. We subsequently brought a couple of their F740 filers and tested them with critical concepts, including SnapCopy, SnapMirror, and SnapRestore. We were also concerned about the ability to take four Microsoft-standard IBM, Compaq, and Dell servers and consolidate them into the NetApp filers with zero impact on the desktop. But those four Microsoft Windows NT personalities transferred directly to the NetApp filer without any disruption.

Q: Why'd you go with an IP-based solution vs. Fibre Channel?

Griffith: What it came down to was the kind of access we wanted. For us and our particular implemen-

tation, Fibre Channel would have been overkill. It would have required us to redeploy our existing network infrastructure. We got our filers wired back via fiber-optic communications, and they really rock. They do everything they need to do as far as average file access for the average client or our average storage solution.

Q: Some companies use NAS for database-centric OLTP applications. Would you consider NAS in this environment?

Griffith: We are considering it currently. To be quite frank, one of the environments we have that is still fairly low-volume in terms of total storage, but which contains extremely critical information, is an application we call CCI, Color Composition International. CCI is huge in Europe, and now it is penetrating the States. It is basically a high-end database content management system that runs on an RS/6000 over [Serial Storage Architecture, an interface that was developed by IBM] directly to SSA storage.

The direction we'd like to move with that is to an Oracle database. We'd like to move that content – the Oracle database engine storage component – to NAS. Our issue with the database world is not speed, but latency. Local databases and other applications get finicky about timeouts and other situations. We haven't done this yet, but I know it's in line for exploration and pioneering sometime this year.

Q: Let's get back to your implementation. When did it begin, how

long did it take, what problems, if any, did you have along the way, and how did you deal with them?

Griffith: There were a couple of speed bumps relating to code issues that we encountered when we rolled out the NetApp F740s. They were sporadically crashing for no apparent reason. This was in the infancy of the rollout. And NetApp was responsive to our problem. We sent the debugs to them, and they did the debug analysis. They had a patch out for it in a matter of 48 hours.

The NetApp implementation itself went flawlessly. We had NetApp turned up in a half hour in terms of configuring volume, bringing up NetVirus aliases – bringing everything online and pushing to the network. We had the typical migration pains and difficulty associated with cleaning up user data and NTFS permissions. But that was no different than if we had moved from one NT box to another.

Q: Would you characterize the F740 filers as a pilot?

Griffith: Effectively. A pilot in terms of looking at the NetApp technology and concepts associated with it before we invested significantly in the pair of F840 clusters we now have that top out at 12 terabytes. I think we had F740s four to six months before we jumped directly to the F840s.

Q: What's the current status of the system?

Griffith: The F840s are up, running, and doing what we need them to do. In fact, we're getting ready to expand them. USA Today's Dot.com

online product is about to requisition a terabyte of storage for all their internal office automation, standard file, Microsoft-standard desktop applications storage. We're also looking to expand our core storage in our McLean headquarters to support a very high availability FTP solution.

Q: How easy is this system to monitor?

Griffith: Very easy. In fact, so easy, it's a bit freaky. We no longer have to reactively manage all our storage. When I say "kind of freaky," it's because now only two of us are required to monitor the NetApp solution, and it works so well that sometimes we forget about it. It just stays in the background and does what it needs to do. Each week, it posts a bunch of reports based on stats, usage, utilization, things like that.

Of course, there's a maintenance agreement which brings a NetApp engineer assigned to the *USA Today* account once a month to do a complete top-to-bottom health status, which includes checking on the filers. Basically, to be quite candid, all of our reactive storage management has pretty much been eliminated.

Q: Did you use an integrator or consultant in the course of this implementation, or did you do it all internally?

Griffith: We winged it. We did a lot of research and, quite honestly, NetApp worked very well for what we needed. We did not have to get a storage integrator. We understood enough about our landscape, our production environment, our editorial

environment, and our standard office automation environment that we were able to cobble it all together and architect this thing ourselves.

Q: What are the primary benefits you've realized as a result of this NetApp solution?

Griffith: First and foremost, redundancy of information for the disaster-recovery scenario. On September 11, we nearly had to implement the NetApp filer in terms of disaster-recovery functionality. Our old headquarters were right across the bridge from Washington, D.C., on the Potomac River and along the flight path of National Airport. The point where the Pentagon was hit by the plane was approximately in the flight trajectory of our headquarters. We could see the Pentagon burning from our building.

There was obviously a great deal of chaos that day. At one point, all of the technical staff had moved to the White Oak, Md., location and had begun bringing all our backup systems on line. We had the peace of mind that comes from knowing that the 3 terabytes we had online were replicated over to White Oak. With just a couple of command lines, we could resurrect the personalities of all the NFS and Microsoft servers on that network from McLean. As you might imagine, business continuity was very important. So the primary benefit we realized from the NetApp solution was data availability.

Q: What other benefits were there?

Griffith: I would say our ability to

extend and expand data with minimal, if any, impact to the production and operational status of our business. That's a major benefit. We can basically expand and extend the function of these NetApp filers while having very little impact on the client side. It is done transparently in the background; I really have little to do with the desktop side of it, but it's very significant that we can go out, grab a file for a user, and restore it in a matter of minutes, as opposed to an hour. And multi-protocol support is a huge advantage for us, because we're as much a Unix shop as we are a Microsoft shop—we talk NFS, FTP, CIFS—you name it.

Q: Was one of your goals to realize a hard-dollar return on investment with this? And if so, have you done that?

Griffith: We have not done a formal calculation on ROI with this particular project, but I can tell you anecdotally that it's beginning to pay off in a big way. The initial investment is done, and we're scaling this existing technology. It used to be we had entire operations departments managing banks of servers for storage that had been spread across dozens of NT file servers, including at least four or five critical key servers. Now, that's all been consolidated and reduced into a NetApp cluster.

So there is no hard ROI value or assessment that we've done. However, the value we've gained has been very clear and tangible. We're definitely getting a return on our NetApp investment even as we continue to extend and expand it. ■



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To forestall these problems, managers should do three things: make themselves available to current employees, articulate ways IT can support business units and introduce basic features to save their employees time and money.

"Before and after cutbacks, managers tend to disappear," says Moravec.

"That's the wrong thing to do." He also recommends cutting your travel to be close to workers. "You need to be willing to listen and show courage during times of corporate stress," he says.

To hold on to current personnel, you should introduce ways to make life better for survivors. This is seldom easy, especially when budgets are crimped. But there are some simple programs that make good business sense and will make life better for people in your downsized organization.

For example, Cisco Systems put employee relationship management applications on the desktop to automate expense reporting for its workers in 28 countries. Based on business policies, about 25,000 expense reports are filled out using a Java thin client every month. Employees are reimbursed via direct deposit. Managers save time, trust is built, and employees no longer lose money to the company by procrastinating on filing paper reports.

This way, at least all the memories won't be horrible. ■

THORNTON MAY

IT's Role in Protecting Digital Assets

SEVERAL YEARS AGO, as the Internet bubble was reaching its maximum circumference, a cashed-out colleague delivered this unasked-for assessment of my career trajectory:

"For a smart guy, you really aren't all that successful."

"What do you mean?" I asked.

"You don't have that many people reporting to you," he explained.

The comment from my "career counselor" came out of the Industrial Age, which was somewhat marked by whether you could "manage" the resources—in this case, workers—that

made the factory run. But today, in the Information Age, career success will be marked by what we can get from information: Will you be able to create, distribute and obtain value from ideas?

Everyone knows that profitability is no longer solely a result of the factories a company operates or the raw materials it extracts. As Seth Godin, co-author of *Unleashing the Ideavirus* (Hyperion, 2001), explains: "We're shipping ideas, not stuff."

That brings us to the topic of intellectual property. The world has changed so much that intellectual property is the most important source of value in the Information Age economy. But what many IT leaders don't appreciate is that intellectual property is a true game-changer. Our craft will never be the same. So, IT leaders face the following five roles as they prepare for this new world:

■ The first and most basic IT role in an economy driven by intellectual



William Zdenkiewicz Jr. is a senior member of Mchenrich Inc., an executive advisory firm in Mchenrich, Pa. Contact him at wjzdenkiewicz@mc.com.

property is its distribution. We have to build and maintain the roads that carry ideas. We have been pretty good at building those roads. But the jury is out regarding the kind of job we're doing of maintaining them.

■ The second is protecting intellectual property. Currently, 3% to 4% of the IT budget is devoted to digital security. But companies that understand the importance of intellectual property are tripling this allocation. This might have been a style point when we were blasting old data around the network. But now that we're moving intellectual property, the stakes have risen. Executives are asking IT leaders, "Can you protect our intellectual property? If we put the digital source of our economic advantage on the cyberspace you have built, will we be safe from carjacks and drive-by defectors?" Have any of you responded, "Yes, I guarantee your intellectual property will be safe?"

Secure Remote Access Requires More Than Tokens

THE REMOTE ACCESS needs of Mathias Thurman's technical staff and the authentication needs of his authentication can both be met, but not solely with the use of tokens.

"Authentication Rollout: Turns Into Control Issue," *Security Manager's Journal*, March 4: A VPN tunnel in conjunction with one-time token authentication can give his staff secure access into their network.

If necessary, Mathias can distinguish his technical staff by using network address translation. Various methods could then be used to bypass the token authentication on each server just for his technical staff. Also note that some token solutions can be designed to automate the sign-in process.

Joe Soller
Network architect
State of New Hampshire
Concord

IMATHIAS THURMAN is letting management force him into the position of making decisions "that may be perceived as impeding the company's business and operations," sooner or later, he will get into trouble.

He should be doing what the rest of his column appears to be depicting—that is, doing the research, identifying the pros and cons and making recommendations. Then a business-line executive should be making the decision.

Thurman appears to have a good feeling for his company's business operations, and that's good, but it isn't enough.

Someone on the security team should have the explicit responsibility of understanding the business well enough to make estimates, such as the \$5,000 per minute of lost business

cited in the article, with credibility.

Thurman can, and should, design, define and recommend policy options. The executive suite should be deciding which options to implement.
William Zdenkiewicz Jr.,
Senior IT specialist
Mchenrich, Pa.

Good Vendors Aren't Negotiation Adversaries

I READ WITH Interest Joe Auer's "One Biter at a Time" article (*Business*, March 11). His advice assumes an adversarial relationship with the vendor, with one side being the clear winner and the other the loser.

I would insist that good vendors need to establish win-win relationships with clients that foster teamwork and consensus-building.

Furthermore, if the vendor isn't made aware of the

Have any of you put a hard and fast date on when you can guarantee the safety of intellectual property? Today's threats may not match the organizations or skill sets we have in place. So, we must change those organizations and upgrade those skill sets.

An interim step might be to ask users to play a much larger role in protecting intellectual property. There can be little argument that the digital world would be much improved if all senior executives were required to enroll in some kind of information protection program. And we must hold each employee responsible for protecting intellectual property. But this will be difficult because many executives lack a digital common sense.

■ The final three roles of the IT leader in intellectual property will be in merchandising (marketing the ideas to be sold), pricing (establishing fees to pay for the ideas) and the collection of rent.

These last three shouldn't be too hard; it's where the dot-comers began their adventure. And maybe you can hire one to fill those roles—and be can report to you. ■

project's overall objectives, there's a high likelihood that the limited functional specifications negotiated would not address downstream requirements.

This often results in time-consuming and expensive rework, finger-pointing and dissatisfaction.

John Deibel
Director of sales and marketing
Interact Multimedia
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COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to: James Ecker, letters editor, Computerworld, PO Box 9071, 500 Old Connecticut Path, Framingham, Mass. 01901. Fax: (508) 875-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

Quick Link

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BUSINESS

THIS WEEK

BERTHS IN BIOTECH

As scientists race to crack the human genome to help develop a new generation of life-saving drugs, the biotechnology industry is hungry for IT professionals with experience in Java, C++ and other areas to support these data-intensive efforts. **PAGE 28**

BOOK REVIEWS



Get the skinny on four new tomes: The first advances the re-engineering mantra, while the second book explores the impact the Internet is having on how managers run their organizations. The third

book examines the strategies that Larry Ellison has deployed to make Oracle so successful, and the fourth offers advice on how to solve your workplace's intergenerational puzzle. **PAGE 34**

MEETING ROI GOALS

Adopters of videoconferencing have seen strong returns on their investments: They say these systems help reduce travel costs and have provided an alternative to flying for employees who have been nervous about taking to the skies since the Sept. 11 terrorist attacks. **PAGE 36**

CAREER ADVISER

Fran Quittel offers advice to two mainframe professionals who have decidedly different slants on the current job market for big-iron experts. **PAGE 38**

PAUL A. STRASSMANN

'Tail' Over 'Teeth'?

THE "TAIL-TO-TOOTH" RATIO is a favorite measure of the Marine Corps. It defines teeth as whatever delivers combat power. Tail is everything else, such as support staffs and the Pentagon-based command. The corporate tail-to-tooth ratio, which I have been watching for more than 20 years, is defined

as the cost of sales, general and administrative expenses to the cost of goods sold. It can give you a good idea how much overhead (which economists define as "transaction costs") is necessary to support the delivery of a dollar's worth of goods and services.

What's embedded in the cost of goods sold is what customers recognize as the value they receive. Customers don't care how much a corporation spends on accountants, personnel administration, advertising, lawyers, computers or executives. But IT executives should care greatly, because consultants, IT vendors and most government economists have long assumed that the more IT you have, the lower the transaction costs. Computerization, they claim, accelerates communication, simplifies workflow, automates clerical tasks, delivers improved intelligence, eliminates redundancies and helps integrate diverse activities. In short, the biggest benefits are lower transaction costs. So the tail-to-tooth ratio should be declining.

As I've said before, those claims are myths. Yet their persistence bothers me.

I used the latest compilation of year 2000 annual reports by Compustat to examine financial results. I focused on recent trends in corporate costs while companies were installing computers at a rate that was growing more than three times as fast as spending on all other business equipment. In effect, corporations were placing larger bets on the prospective payoffs from computers than on investments in any other means of production (Business Opinion, April 9, 2001). When corporations proposed investments in IT, reductions in transaction costs always showed up in projections of "tangible" gains. But from the accompanying chart based on the Compustat data, we can examine the evidence of what more than a decade of exuberant IT spending has delivered.

The steady gain in the average transaction expenses necessary to support the costs of goods and services caused U.S. firms to spend \$273 billion more in transaction expenses in 2000, or 14% more than indicated by the ratio that worked for the firms in 1990 (\$1.91 billion vs. \$1.64 billion). This estimate offers the most optimistic interpretation of what the additional costs were. If identical calculations were based on the median ratio of transaction costs to the cost of goods —

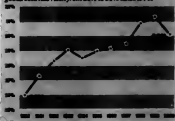
which offers a more conservative view of the situation — that rise would have been slightly more than double that percentage. The chief reason for the large gains in added costs is a rise in pay in the financial services sector, where computerization was most pervasive and consumers about one-third of all IT in the U.S. economy.

Implications: The past two decades saw the installation of costly information management systems that promised reductions in transaction costs. But the numbers disprove such assumptions. The trend in transaction costs is a telling indicator that will help validate the long-term effectiveness of IT investments (Business Opinion, Jan. 7). Given the increased pressure to justify IT payoffs, this metric offers evidence that IT investments haven't improved corporate efficiency, since these numbers can be linked to financial statements on which shareholders, financial analysts and boards of directors rely. What counts today is what benefits shareholders. The prescription for that? Create a trim organization that can make itself more competitive by reducing transaction costs. ▀

In a follow-up column, Strassmann will examine a frequently used and misleading metric: the IT budget-to-corporate revenue ratio. Contact him at paul@strassmann.com.

Tail-to-Tooth Ratio on the Rise

The ratio of average transaction costs to the costs of goods sold has risen from 26% to 30% since 1990.



SOURCE: COMPUSTAT DATA FROM 1990 TO 2000. COST OF GOODS SOLD AND COST OF SALES IN COMPANIES' INCOME STATEMENTS. RATIO IS CALCULATED AS COST OF SALES DIVIDED BY COST OF GOODS SOLD.

BUSINESS

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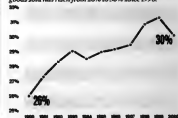
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SOURCE: "TRENDS IN TAIL-TO-TOOTH RATIO AND TRANSACTION COSTS," STRASSMANN, 2001. © 2001 STRASSMANN & COMPANY, INC. ALL RIGHTS RESERVED. PHOTO BY JEFFREY M. HARRIS FOR COMPUTERWORLD

Guarding THE Gates

Corporate Web sites are a virtual gold mine for competitive intelligence excavators. Is your company posting too much information online? **BY DEBORAH RADCLIFF**



WHEN BANKRUPT Exodus Communications Inc. began asset acquisition proceedings with London-based Cable & Wireless PLC in February, Exodus' chief security officer arrived at the first meeting carrying a 700-page dossier on Cable & Wireless. All of this information was gathered from open sources on the Internet.

"I was able to put together Cable & Wireless' service, personnel, structure, revenues, customer base and much more," says Bill Hancock, Exodus' chief security officer. "[Cable & Wireless executives] were stunned that I knew so much about them, but I do this type of research all the time on prospective clients."

Chances are, bits and pieces of your company's intellectual property are floating around cyberspace. A corporate Web site is a virtual gold mine for competitive intelligence gatherers. Also, partner and vendor links can provide clues to product development plans. Job postings can tip off regional expansion plans. And employees can leak strategic information on discussion boards and chat groups.

"Corporate Web sites contain a tremendous amount of information about corporate strategies, plans and personnel," says Richard Hunter, vice president of security research at Gartner Inc. in Stamford, Conn.

For the most part, businesses haven't caught on to the ubiquity of Internet-posted material, nor have they developed policies to manage this information, says Edward L. Telders, security manager at Pemco Financial Services in Seattle. Because of the Internet, he adds, "there's been a virtual explosion of competitive intelligence" available for digital detectives to gather.

For example, instead of searching through databases and analyst reports, a good competitive intelligence investigator can easily find product development information by seeing who's linking to your site. Sometimes, those links lead right back to supplier testimonials that offer way too much information about your business.

"In some cases, you'll see descriptions and case studies about how they redesigned your plant—stuff you'd be shocked to read," says John Jay McGonagle, co-author of seven books on competitive intelligence and managing partner of The Helicon Group in Blandon, Pa.

While competitive intelligence still requires good old-fashioned gumshoe work, the Internet now provides the best jumping-off point, according to McGonagle and other experts. And in some cases, the Internet can yield the bulk of information needed to influence competitive strategies.

To highlight the many ways the Internet makes information-gathering easier and to offer IT professionals steps they can take to better protect corporate data, McGonagle offers the following case studies from his work with real clients during the past two years. Corporate identities have been omitted for confidentiality reasons.

THE PHANTOM WEB SITE

A financial services firm (Bank A) heard that a competitor (Bank B) might be entering Bank A's unique employee benefits market niche. Bank A's CEO, who heard that Bank B's code name for the project was Modern Garden, was especially concerned because Bank A had recently lost two employees from its employee benefits branch to Bank B.

Bank A hired hired McGonagle to investigate the situation.

He first searched Bank B's Web page and found nothing. So he went to the Marina Del Rey, Calif.-based Internet Corporation for Assigned Names and Numbers' Web site at www.INTERNIC.com, and typed in "Modern Garden." ModernGarden.org and ModernGarden.net were available for sale. ModernGarden.com was not available for sale, meaning it was already taken.

But, interestingly, ModernGarden.com didn't show up as an existing Internet address either, meaning search engines wouldn't be able to locate it. "It's important to look at what's missing," his partner told him and typed "ModernGarden.com" into a browser. Up popped a Web page with Bank B's logo on it.

The secret page had a wealth of information: the new project statement, positioning, launch date, marketing channels — along with the names and phone numbers of those working on the new offering. Two of those workers were the former Bank A employees.

Lessons learned: This information helped Bank A prepare for the oncoming assault from its competitor, says McGonagle. Those testing the Web site shouldn't have used the corporate logo. Nor should they have put that site on the public Web until its formal launch, McGonagle says. If it was crucial to test the page on the World Wide Web, then Bank B should have assigned it space that doesn't carry the Web address and instead should have asked administrators to reach it directly through an IP address.

THE ROGUE RÉSUMÉ LINK

A software company (Company X) was touting a new Web-based platform that sounded impossible to Company X's competitor, which was a year away from releasing a similar application. The competitor wanted to know if X's technology was truly ready.

McGonagle couldn't find any obvious sources of information on Company X's Web site, so he decided to find out who was linking to it. He did so by using Palo Alto, Calif.-based AltaVista Co.'s search engine at www.altavista.com and typing in "link:www.CompanyX.com."

He found a résumé link to Company X. Clicking on the link, McGonagle saw that the résumé belonged to a Java development consultant claiming to have worked on Company X's new Web platform.

The discovery helped McGonagle link the Java development consultant to the first half of the project. A telephone call to the developer confirmed that he had,

indeed, worked on the early portion of the project.

Next, McGonagle needed to find out who was finishing it. So he visited the Web pages of contracting firms specializing in this type of technology and searched for Company X's name. He found Company X's name on the customer list at one of the firms and then telephoned the project consultant who'd linked his résumé to Company X's Web page.

"We asked the developer if he knew anything about the contracting firm we'd identified. We asked

if their work would fit with the work he'd already done on the project," says McGonagle. "The developer said he knew of the type of work the new contractor did and that it wouldn't fit very well. He said the product, if delivered on schedule, would be full of bugs. So our client knew that they could advertise that their product took

“In some cases, you'll see descriptions and case studies about how [a supplier] redesigned your plant — stuff you'd be shocked to read.”

— John Jay McGonagle, managing partner, The Helicon Group

longer because it's superior."

Lessons learned: Company X should have checked who was linking to it the same way McGonagle did, something every business should do periodically, he says. Companies should also visit the Web sites of their suppliers and contractors that aren't linking to them and see who's mentioning them on their Web pages.

JOB BOARD TIP-OFFS

A chain retailer was aware that its most staunch competitor was expanding. The retailer wanted to know how many new stores and distribution centers were in the works and how much the competitor was planning to spend on logistics.

Knowing that new stores need staffing, McGonagle started searching on job boards like HotJobs.com and Monster.com. "The advertisements gave away far too much information — where they're expanding to, supply chain and management methodologies, growth target," he says. "This information, combined with other research [including a review of zoning applications and calls to securities analysts] helped us to determine their logistics spending."

Lessons learned: The expanding retailer shouldn't have put so much information in its job postings, McGonagle says. Instead, it should have published something vague, like "We're an aggressive, expanding company," and saved the details for interviews. Preventive measures like these should be part of any company's data handling policy, says Telders and Hancock (see box). Adds Telders, "Before your company puts anything on the Web, ask yourself, 'Is this something that our company would want for public viewing?'" ■

Quick Link

Gathering competitive intelligence involves widely available search engines. But to analyze the information, experts turn to a cadre of specialized data analysis and organizational tools. To find out more, go to www.computerworld.com/729866

There's another intellectual property threat made worse by the Internet. Names, logos and copyrights are being stolen by bulk e-mailers and pornography bent on driving traffic to their sites. For more on how to protect your organization's intellectual property, go to www.computerworld.com/729864

In addition, they may receive your e-mails, answer calls for supplementary data links and look for other Web pages still connected to your site.

— Deborah Rubinoff

Quick Link

For tips on how to guard sensitive data revealed by links with partners and suppliers and how to protect corporate information from being dispersed in chat rooms, go to www.computerworld.com/729868

STILL YEARNING FOR the dot-com days, when IT skills were not only critical but also sexy? Wishing for a time when you could come to work with a credible chance of helping to change the world every day?

Take heart. There's still at least one industry in which advanced IT is so vital that without it, companies literally can't compete. With the right combination of technology, science and luck,

BIOTECH

such firms stand to be not only competitive, but also incredibly profitable while indeed changing the world—or at least curing disease and improving the human condition.

Pretty high concept, but that's the whole point behind biotechnology, an industry that's using the recently decoded human genome as a set of instructions for how to design drugs to treat cancer, diabetes, depression and dozens of other physical and mental maladies.

"A lot of it involves straight IT skills, but in the end, what you're trying to do is pretty significant," says Paul Dupuis, who has a background in mainstream IT and a talent for understatement. He is director of IT at Vertex Pharmaceuticals Inc. in Cambridge, Mass.

Gaining Ground

Leveraging IT to help read the human genome and design compounds according to its instructions could cut two to three years off the 15 it currently takes to develop a single new drug. It could also slice the average \$800 million price tag for drug development in half, according to a report from The Boston Consulting Group Inc.

Advances in homegrown and commercial informatics are making the decoding process easier, but the data is growing faster than the technology used to analyze it.

"A year or two ago, we were all very focused on sequencing genes, figuring out how they assemble together into chromosomes, which 10 years ago seemed like a phenomenal project," says George Morris, director of bioinformatics at drug development firm Zycos Inc. in Lexington, Mass.

"Now we're interested in proteomics—investigating the proteins that genes code for—and they're much more complicated," Morris says. "There's a many-to-one relationship between a protein and a gene, and many different forms of it. There's a huge order of mag-

Continued on page 32

"YOU HAVE A GRAND CANYON chasm between a bench scientist and a classic IT person," says Brian Smith/Dine's Terry Francis. "You need an educated interface between the two."



Job Market ELIXIR

Scientists lead the effort to squeeze medical solutions from the human genome, but mainstream IT pros provide the skills needed to make it happen. **By Kevin Fogarty**

*When choosing a technology partner,
there are many things to look for.*

Always start with this.

Microsoft
CERTIFIED
Partner

The above logo represents the pinnacle of business technology in the world today. The companies that bear it are Microsoft Certified Partners, and when you encounter one, you encounter a professional proven to be the best at what they do. They have the most certified experts on staff, receiving their training, support and tools directly from Microsoft. They have the broadest range of experience, having expertise in areas such as networking, infrastructure, collaboration, and many other leading disciplines. And there's a Microsoft Certified Partner right near you. To find one, go to <http://mcspreferential.microsoft.com/>

There's a Dell PowerEdge server
for every kind of business.



Continued from page 28
nitude [of] greater complexity in this."

That level of complexity could flummox many mainstream IT professionals, but the skills that made them successful in retail, manufacturing, engineering and other industries are still applicable in biotech and pharmaceutical companies. There's just an additional layer of complexity into which they can grow — if that's the direction they choose, Dupuis says.

Because they have to maintain not only a global scientific research operation but also an immense communications infrastructure, large pharmaceutical companies provide the greatest opportunity for IT professionals without a medical or scientific background.

That range of needs means that IT workers with good technical skills may be able to plug into a research operation, according to David Pioli, head of global informatics in lead generation at Aventis SA in Frankfurt. The Schillingheim, France-based pharmaceutical company was formed two years ago by the merger of Germany-based Hoechst Marion Roussel AG and France-based Rhone-Poulenc Rorer SA. Project management, application development, systems management and personnel management skills are always applicable, Pioli says (see sidebar).

Bonding IT and Scientists

But if IT professionals want to be successful in supporting or becoming part of Aventis' research team, he says, they have to learn enough about the science and research activities to form tight bonds among the three groups that drive the process: scientists, informatics and a global IT group that supports both research and mainstream corporate activities.

The focus has to be on the science and the tools that make scientific research faster and more accurate, Pioli says. Delivering those tools — algorithms or analytic applications that answer specific biological or chemical questions — is primarily the job of informatics, who in turn rely on IT professionals for support.

"An informatics guy is one half a frustrated IT developer and one half a frustrated scientist," Pioli says. "It's the healthy tension between the two that makes a successful informatician."

Informaticians at Aventis must work with the IT department to make sure the applications are scalable, build and maintain the high-end servers that run them, and make sure the systems are transferable to other research groups so they aren't reinventing the same

tools over and over.

"It's all about synergies, avoiding duplication of effort," says Pioli. "If you just let informatics run away with it self, you end up building a mini-IS group in informatics and another to support the rest of the business."

The informatics and information systems teams at Aventis are still separate, but the company has created a semiformal scientific computing group to give concentrated IT support to the informatics groups, which have about 200 staffers worldwide.

Middlesex, England-based GlaxoSmithKline PLC (GSK) and many other pharmaceutical companies have similar mixed teams whose goal is to

with the pace of research and adaptable enough to keep up with rapid change, according to Simon Dear, who heads a 170-person global team as director of bioinformatics engineering for genetics research at GSK.

"We really are looking for a broad background and the ability to adapt," Dear says.

Application development skills in areas such as Java, C, database programming and administration, storage and data management, are also keenly sought after, Francis says.

But success in this field doesn't necessarily depend on a scientific background. Dear's background is in engineering.

"There's a lot of opportunity in informatics in GSK to prove that you're effective and to learn on the job," Dear says. "Everybody learns the appropriate level of the science. They just have to be willing to get in there and get their hands dirty."

Biotech Baring

At smaller biotech companies, the administrative integration problem is less severe because most firms' efforts go into the science itself and not into supporting a global administrative infrastructure, according to Mark Adams, vice president of bioinformatics at drug discovery company VarianGen Inc. in Cambridge, Mass.

Biotech companies still need database administrators, project managers and IT managers who can negotiate a contract, maintain a budget and build a data center where the compute-power needs are high, Dupuis says.

But anyone who can build a high-performance cluster or develop a complex analytical application that runs efficiently on a parallel-processing architecture will always be welcome in a biotech shop, says Adams, a bioinformatics manager who also has an engineering background.

"You just have to have people with varied interests who want to learn how to apply stuff in a different area," Adams says.

"They have to be not just tolerant of change but excited by it and be able to recognize that the science is evolving and the challenge for IT is to not slow that down but to respond to that appropriately." ■

Foragery is a freelance writer in Sudbury, Mass. Contact him at kavivagory@yahoo.com.

Quick Link

Read about IT job opportunities with vendors of biotech software systems.

www.computerworld.com/2001

Biotech Job Prospects

TYPES OF JOBS

Academic positions: Administrative and maintenance (1). Most informatics are handled by graduate assistants or computer scientists hired by academic laboratories.

Pharmaceutical companies: All have large mainstream IT organizations that could be a good jumping-off point for IT professionals interested in working with biotech researchers. They also have formal teams of informatics IT people, which provides a good learning environment.

Biotech companies: Tend to hire proportionately more informatics than general IT workers, but jobs also exist for individual contributors and managers. Someone has to build and maintain high-performance systems and applications.

JOB DESCRIPTIONS

Informaticians: Master's or Ph.D. in biology or chemistry. Usually trained in science and have self-taught programming skills or a new programming dialect and certification. Not an opportunity for most IT managers.

Application developers: Usually some background in biology or chemistry, but may also have a background in mathematics. Scientists in creating algorithms and analytic methods to pick patterns out of masses of genetic or proteomic data.

IT support: Some familiarity or background in science, but specializing in application development and systems integration. Key skills include the ability to talk to informaticians and scientists and ascertain what they actually need and how to build it in a way that's viable and transferable to other research groups.

Project managers: Often have no background in science, but have intensive IT project management experience. A key position and a skill for pharmaceutical and biotech companies. Often a path to advancement to manager of informatics groups.

JOB SKILLS NEEDED

- Java
- Perl
- C, C++
- Systems and network engineering
- Project management

SALARIES

\$60,000 to \$120,000 for midlevel managers or senior IT people. A background in both science and IT may bring a premium.

AVAILABILITY

In this economy, IT skills aren't hard to find, but jobs are open, and pharmaceutical and biotech companies are hiring.

FUTURE

Informaticians are getting more background in science, IT, and general information now than do general IT informatics, which is increasing the suitability of people trained specifically in biotechnology techniques and technology.

Do-It-Yourself Informatics

Biotechnology and pharmaceutical companies will spend increasingly large amounts of money on bioinformatics during the next few years, but the bulk of their spending will continue to go toward systems and applications they build in-house.

	THIRD-PARTY TECHNOLOGY	IN-HOUSE TECHNOLOGY
2000	\$90M	\$750M
2001	\$190M	\$1B
2002	\$320M	\$1.22B
2003	\$640M	\$1.33B
2004	\$960M	\$1.56
2005	\$1.44B	\$1.57B

SOURCE: THE BULLOCK CONSULTING GROUP INC. BIOSTAT

give the scientists as much research firepower as possible while maximizing the money and time spent on IT, says Terry Francis, head of operations and infrastructure for the cheminformatics group at GSK.

"You have a Grand Canyon chasm between a bench scientist and a classic IT person," Francis says. "One group doesn't understand that when the network goes down, people get fired. The other group doesn't know much about what the scientists do. You need an educated interface between the two."

Staying Flexible

For both GSK and Aventis, that educated interface consists of a mixed group of science-savvy IT people and informaticians.

IT people working in these groups have to be agile enough to pick up on scientific concepts, willing to prototype new systems rapidly to keep up



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X-Engineering and the Company of the Future

New tomes that advance the re-engineering mantra, examine the impact the Web is having on corporate decision-makers and explore the intergenerational dynamics at play in today's workforce.

X-Engineering the Corporation: Rethinking Your Business in the Digital Age, by James Champy (Warner Books, 232 pages, \$25.95). Champy, the co-godfather (with Michael Hammer) of the re-engineering movement of the early '90s, takes re-engineering into the present with a book that offers corporations advice on how to integrate their processes and with whom—specifically, suppliers and customers—with a heavy emphasis on the role IT plays.

Champy knows the role of IT through his work as chairman of consulting at Dallas-based Perot Systems Corp. and as a former Computerworld columnist. Much of his advice should resonate with IT leaders.

Take note of Chapter 5: There, Champy poses four key questions that a company must ask itself about its use of and investment in IT to en-

able it to design new processes and harmonize them with others, as well as to learn the needs and expectations of customers and suppliers.

Also, pay attention to Chapter 9, where Champy lists and discusses seven old and new tenets of management, all of which provide food for thought for a CIO, especially this pair:

Old tenet: Leave IT to the technologists.

New tenet: IT is everyone's job.

—Rick Sola

The Company of the Future: How the Communications Revolution is Changing Management, by Frances Cairncross (Harvard Business School Press, 224 pages, \$27.50). While the short-term profitability of the dot-com era was certainly hyped, the influence that the Internet will have on how managers run and structure corporations will be long lasting. That's the central message from Cairncross, management editor at *The Economist*, who lays out a use-



ful road map of scenarios and ideas for executives to ponder.

In addition to exploring the effect of the Internet revolution on knowledge management, collaboration and innovation, Cairncross delves into the impact the Web is having on corporate decision-makers in managing an ever-shifting workforce and in ensuring that geographically dispersed project teams are working on the same page.

Cairncross is deft at pointing out companies that have leveraged the Internet to their benefit and others that have stumbled. For example, she points to Ford Motor Co., which is using the Internet to deepen relationships with its distributors and suppliers. Yet the Internet can't prevent a re-

lationship like the Ford/Firestone tire debacle from turning sour, she points out.

One area worth noting: a section before the first chapter that offers Cairncross' "Top 10 Rules for Survival."

—Thomas Hoffman

The Oracle of Oracle: The Story of Veeva! CEO Larry Ellison and the Strategies Behind His Company's Phenomenal Success, by Florence M. Stone (Amacom Books, 224 pages, \$24.95). Ellison is arguably the most flamboyant figure in the IT world, widely noted as much for his arrogance as for his brilliance and visionary thinking.

But he holds a prime spot in the high-tech industry as the shaper and leader of Oracle Corp., the world's second-largest software company after Microsoft Corp. Stone, the author of nine books (including *Business the Amazon.com Way* and *Business the Dell Way*, under the pseudonym Rebecca Saunders), explores Ellison's personal style and business success.

After giving a brief history of Ellison and his company, Stone focuses on values and strategies, ending with her views and insights on where Oracle and the software industry could be heading. In a word,



er chapter, she concludes that despite the press's and public's obsession with Ellison's personality, there are four qualities about him in business that can't be ignored: his management ability, leadership, vision and philanthropy.

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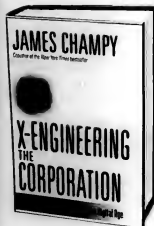
When Generations Collide: Who They Are, Why They Clash, How to Solve the Generational Puzzle at Work, by Lynn C. Lancaster and David Stillman (HarperCollins, 240 pages, \$25.95).

Whether you're a senior executive, middle manager or worker bee, you'll have to be living in a cave (or telecommuting full-time) not to see the intergenerational gaps that exist in today's workplace.

From "traditionalist" employees, whose head-down work ethic stems from the Great Depression, to "millennials," who bring a mix of smarts and social conscience to the table, the rifts between worker strata are all too evident. Baby boomer Lancaster and Generation X Stillman present plenty of fun anecdotes for workers from the four generations (traditionalists, baby boomers, Gen Xers and millennials) to draw from.

As difficult as it can be for a baby boomer to understand and connect with a Gen Xer—much less with a millennial whose tastes and interests may seem like polar opposites—Lancaster and Stillman offer some valuable lessons that IT managers and business unit executives can use to help close some of those gaps and make diverse workforces operate more effectively.

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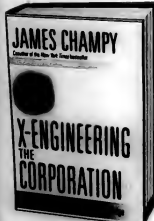


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Tuning Into Travel Savings

No frequent-flier miles, but videoconferencing is proving to be a cheaper and easier way for businesspeople to meet post-Sept. 11.

VIDEOCONFERENCING, which has long promised to save business travelers both misery and money, gained new interest immediately following the Sept. 11 tragedy. Several months later, as most businesspeople begin again to embrace the skies, some companies remain convinced that video meetings can save time and money and offer a viable alternative to travel.

Take Ernst & Young LLP in New York, which by the end of January was hosting more than 200 videoconferences per month. Although that's half of the 400 or so videoconferences the Big Five firm ran in October and November, the numbers remain high — up to 300 more video calls per month than in the same period last year, according to Craig Brandolino, assistant director of audio and videoconferencing services at Ernst & Young.

Videoconferencing saves Ernst &

Young \$50,000 to \$75,000 per month in travel expenses, says Brandolino, who notes that his company uses video connections for everything from internal town hall gatherings to meetings with clients. The payback in travel savings, based on the cost of equipment, installation, Integrated Services Digital Network (ISDN) lines and management, took just four to six months, Brandolino says.

New York-based Bristol-Myers Squibb Co. doesn't quantify the ROI for videoconferencing as closely as Ernst & Young. Nevertheless, the pharmaceutical giant's videoconferencing strategy was initially aimed at travel savings, says Steve Marson, director of the company's e-conferencing department.

"We worked closely with corporate travel to find routes where people were traveling that cost the most money," Marson says. "Then we targeted

our meeting [in conferencing technology] there." Many of the routes Bristol Myers targeted for videoconferencing are between the U.S. and Europe and between the continental U.S. and Puerto Rico, according to Marson.

Setup Costs

Generally, a small room or executive video system, like the one set up by Bristol-Myers in Puerto Rico, costs \$30,000 to install "once all the parts of the system, local network and labor are included," says Marson. "And then [it] costs \$30,000 a year to run."

Beyond the travel cost savings that videoconferencing systems generate, Marson also points to the productivity gains that employees reap from not having to travel to and from meetings.

A study released last month by WorldCom Inc. confirms that notion. According to the study, an off-site meeting pobbles up 21 hours in travel, preparation and meeting time compared with four hours when done via a videoconference (see chart).

At Bristol-Myers, videoconferencing is but one component in a range of virtual conferencing technologies that also include audio and Web conferencing and streaming video broadcasting. Marson says one high-ranking sales manager told him that two-way video is normally used "when you need to see the whites of their eyes." He was referring to videoconferences that sales managers regularly hold with staff to get commitments on sales targets.

Andy Nilsson, an analyst at Wainhouse Research LLC in Brookline, Mass., says a lot of top-level managers support videoconferencing because it's a way "to make sure people are paying attention by reading their body language — or ... to tell if someone walks out of the room while the conference is in session."

Marson says large-scale videoconferencing even costs less than telecon-

Going the XSP Route

An alternative to managing videoconferencing in-house is using an IP-based videoconferencing service.

Brian Taleb-Zadeh, director of network engineering for Tin City Brokerage Inc. in San Francisco, is doing just that. After Sept. 11, Taleb-Zadeh says he was asked by senior management to investigate setting up videoconferencing as a way to cut down on travel. He subsequently struck a deal with the Glowpoint videoconferencing service operated by Wire One Technologies Inc. in Hillsdale, N.J.

Tin City pays Wire One a flat rate of \$399 per month for each of three U.S. sites connected to the videoconferencing service. That includes 30 hours of videoconferencing time every month, which Taleb-Zadeh says is more than adequate, noting that he doesn't have to run the numbers to know that the service is saving the brokerage level dollars.

—James Coppe

ferencing. "I use a ratio of somewhere around 10-to-1 for the relative costs of audio- and videoconferencing," he says.

For example, a 500-person meeting would cost more than \$5,000 per hour if all the participants used individual phone calls to audioconference, but it would cost less than \$1,000 if the participants were gathered into five videoconferencing rooms each holding 100 people, he says.

Ernst & Young and Squibb primarily use room-based videoconferencing systems that run over ISDN lines. However, both companies are testing video over IP, which enables companies to conduct videoconferencing over an existing wide-area network instead of leasing ISDN lines from a local phone company.

"We're looking at video to the desktop," says Brandolino, referring to a pilot program Ernst & Young has under way using ViaVideo technology from Milpitas, Calif.-based Polycom Inc. ViaVideo is a small camera with a built-in microphone that sells for just under \$600, far less costly than large-room systems that sell for around \$15,000.

Fear of Flying?

One quarter of travelers who have averaged six business trips in the past year have reduced air travel since Sept. 11, according to "Meetings in America IV: The New Road Warrior," a report released March 6 by WorldCom Inc.

Travelers who have canceled trips have turned to the following alternatives (multiple responses allowed):



Business travelers who have changed their travel plans since Sept. 11 are more likely to use videoconferencing in the future:

USED SINCE SEPT. 11		TO BE USED IN FUTURE	
Audio	42%	Audio	36%
Video	32%	Video	36%
Web	23%	Web	26%

Coppe is an Indiana-based freelance writer. Contact him at jamescoppe@sbnet.com.

For a list of videoconferencing resources, go to www.computerworld.com/728466

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No frequent-flier miles, but videoconferencing is proving to be a cheaper and easier way for businesspeople to meet post-Sept. 11. By James Cope

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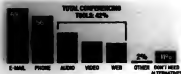
Cope is an Indiana-based freelance writer. Contact him at jamescope@shinet.com.

For a list of videoconferencing resources, go to www.computerworld.com/go/220180

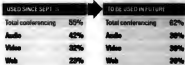
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SOURCE: OCT. 12 TO JUNE 8, 2001. BY THE U.S. BUSINESS TRAVELERS' ASSOCIATION. TRAVEL COSTS WERE REDUCED BY 10% TO 15% SINCE SEPT. 11. 40% OF TRAVELERS USED VIDEOCONFERENCING IN THE PAST YEAR. 10% OF TRAVELERS USED VIDEOCONFERENCING IN THE PAST YEAR.



How the FIFA World Cup™ kicked off an IP telephony first. The largest sporting event in the world, the FIFA World Cup™ utilizes over 40,000 volunteers and 12,000 media personnel who must communicate between 20 venues in 2 countries, 24-hours a day. And they needed an IP telephony solution that could work with it all. So they chose Avaya to build one of the world's largest converged networks. Our IP solution gave them the same features and functionality of sophisticated office phone systems, with the ability to talk, transmit data, manage e-mail, faxes and even wireless communications simultaneously — all over a single network. For a white paper detailing how Avaya is powering the FIFA World Cup™, visit avaya.com/nwfwc.



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"Dear Career Adviser:

I'm an out-of-work Cobol programmer with almost three decades of experience. I've been looking for work in the Chicago area for more than six months, at almost any salary. I can't get interviews; I can't get an offer. I rarely even get a reply to my applications.

Agencies claim that they're swamped with replies for every vacancy. And now Computerworld is running articles claiming that there's a shortage of people with exactly my skills?

—QUESTIONING REALITY

6 Dear Career Adviser:

I'm an ex-MVS systems programmer who gets calls from recruiters absolutely desperate for people to run mainframes. Right now, I don't know a single qualified mainframe programmer who is out of work; I do know unemployed Cisco and Java people. Unlike most Win-

dows programmers, I earn six figures. Why do people who haven't learned new mainframe skills in years think they will earn more as newbies on another platform?

—EX-MVS

Dear Questioning Reality and Ex-MVS:

In the past 24 months, mainframe job opportunities — and compensation packages — have plummeted. Mainframe applications are mostly in maintenance mode.

"There is very little, if any, new development being done in mainframe technology,"

says Rob Koss, branch manager at Interactive Business Systems Inc. in Chicago, adding that many mainframe people who are out of work will need to retool their skills to land another job.

On the other hand, some mainframe skills are in demand, particularly those involving mainframe systems programming, database administration and DB2.

"Companies have invested millions of dollars in mainframe applications and data, which they have no intention of abandoning," says Archie Patterson, dean of business

programs at Chicago-based DeVry University, an institution that has — and plans to keep — a mainframe education program.

In addition, IBM and Sun both emphasize newer cost-efficient mainframe strategies. And maintaining the 200 billion lines of Cobol code still in use today often requires specific skills that are hard to find among today's dwindling mainframe applicant pool.

So, what then is "reality" if you're seeking new work?

"Only 3% to 5% of current jobs map to mainframe skills," says Bob Senatore, executive vice president of technology consulting and staffing at Woodbury, N.Y.-based Conforce Corp., a technology consulting and staffing firm.

Furthermore, given most employers' current needs, today's mainframe hiring is governed by

specifics. This means that mainframe talent is hired one person at a time to fill very well-defined roles, on three- to six-month contracts at a pay rate of \$35 to \$60 dollars per hour, a major drop from previous highs. "If you talk about DB2, secure databases and connectivity, you might be able to tell a pretty convincing story that will merit getting a salary every week," says Senatore. ▽

You can bolster your value as a candidate through industry-specific expertise. "Mainframe people can sometimes boost their demand with skills relating strongly to specific industries such as health care or biotech," says Phil Ptaszek, a vice president at Talent

Tree Technical in Boston.

In any case, you must also show skills well beyond Cobol and CICS. "If you talk about DB2, secure databases and connectivity, you might be able to tell a pretty convincing story that will merit getting a salary every week," says Senatore. ▽



WORKSTYLES

Setting Priorities at USAA

Sharon Haverish, an IT systems analyst in USAA's life insurance group, discusses the IT culture at the Fortune 500 company.

What are the most critical systems your department supports?
"We have 11 critical systems and one big central system called HAL, which stands for 'health, annuities and life.' The other 11 interact with the HAL system but do individual functions, like risk rating for members. If one of these systems went down, it would mean representatives would be unable to access policies or quotes or do customer service for members."

How would you describe the pace of your work? "We are

always busy. But we have a unique system of prioritizing our work. We meet with our users and the people who control the budgets each week and decide on what's the most important thing to do — what will have the most impact, what has to be done the fastest, what has to happen for regulation purposes. And we rank our work — this is No. 1, priority, this is No. 2, this is No. 3."

How would you describe the overall culture of IT? "We're structured in terms of work, but it's pretty relaxed in terms of environment and how we dress. We don't do anything on the fly. If you come up with an idea, you can run it by a senior analyst

to decide whether to present it at the open forum meeting, which is held twice a week. At the meeting, you present your idea to an architect, and he might throw back some questions at you so everything gets discussed."

How much interaction does your IT department have with end users? "There are quite a few people in our department who were end users."

Most of the IT people know the business very well, and some meet with end users every day?

What are some of the ways IT employees can communicate with their superiors? "There are so many open doors here. And once a month, the assistant vice president has a roundtable discussion, where he answers anonymous questions."

We also have roundtable meetings and lunches with our president?

What do you think makes your company's IT department unique? "USAA itself is a very large campus building. There's banking, Starbucks, cafeterias with many varieties of food, two fitness centers, covered parking, security at every gate, jogging paths, tennis courts, full showers, even a little library if you want to take a break and read a book."

What aspect of work do you look forward to each day?

"We work in matrices, so you get involved with lots of people and get exposure to how things are done in other areas. And they're always willing to train you, so you really learn a lot."

—Sharon Haverish
haverish@usaa.com



USAA

Who they are: A Fortune 500 insurance provider

Main location: San Antonio

Interviewee: Sharon Haverish, IT systems analyst in the life insurance group

Number of IT employees: 2,800 at USAA; 125 in the life insurance group

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THIS WEEK

DECISIVE INFORMATION

IT is increasingly using real-time Web information to make business decisions. Integration issues have, however, forced many companies to focus on more modest real-time Web analytics projects than they might like. **PAGE 42**

HANDS ON

Reviews editor Russell Kay takes a look at what may be the first commercial high-resolution imaging system that lets you see an object in true 3-D. **PAGE 44**

FUTURE WATCH

In the not-so-distant future, experts say, rampant viruses and worms could bring down PDAs, mobile phones, e-mail or even the entire Web. **PAGE 46**

SECURITY JOURNAL

What's the value of a security certification? From a practical day-to-day operations standpoint, not much, security manager Vince Tuesday concludes after taking two exams. But certifications may have other benefits. **PAGE 48**



QUICKSTUDY

Random numbers can be produced by physical processes, such as throwing a die, flipping a coin or measuring intervals between particles emitted in radioactive decay. Software can create only "pseudo-random" numbers, starting from a single random "seed." Learn more in this week's primer. **PAGE 50**

NICHOLAS PETRELEY

A Fool's Look at INS Flap

IHAD A REMARKABLE stroke of luck finding an insider contact this week while visiting my local convenience store to buy a bottle of seltzer and a pickled egg. It turns out that the clerk used to work in the IT department for al-Qaeda. At first, I wasn't sure if this guy was on the level, but then he explained that his job was to disseminate anthrax spores through spam e-mail, which sounded genuine enough.

He had an interesting spin on the recent Immigration and Naturalization Service (INS) fiasco. The INS took a lot of heat when it issued visa letters to the dead terrorists Mohamed Atta and Marwan al-Shehhi. The INS blamed the error on antiquated record-keeping procedures. My inside source, who wishes to remain anonymous, says differently. According to this fellow, the problem revolves around the fact that the INS volunteered to be one of the first sites to convert its antiquated systems to a Web services infrastructure.

Al-Qaeda leaders got wind of this and instructed the organization's operatives in Afghan caves to write a crack program that used the Internet-based Universal Description, Discovery and Integration (UDDI) specification to discover the Web services object at INS designed to issue valid visas.

This wasn't an easy project to start. It was a slow, tedious and expensive process to run twisted pair from a mountain cave complex to the nearest city with Internet access, which is Kabul. Worse, the mountain fauna were prone to chewing on the exposed wires when they weren't sufficiently buried. Even worse, DSL service wasn't available in Kabul when the project was finished. Of course, since the cave complex was a few hundred miles far from the city to support DSL access, this didn't matter.

Finally, it took a while for al-Qaeda to figure out how to use UDDI to search for the Web services provided by the INS. The agency's .Net Web services were still in beta, so it hadn't made the Web address for its UDDI registry publicly available. That meant al-Qaeda had to find it by scanning IP addresses for Web services that included any references to INS or visa.

The process was painstakingly slow, but it wasn't a total loss. Early on, the crack program that searched for the keywords visa and INS accidentally ordered platinum Visa credit cards for all al-Qaeda members. The organization later used the cards to pay for the INS visas, but not before accidentally ordering a wide variety

of Netscape plug-INS, tickets to various drive-INS and membership dues for organizations such as the Infusion Nurses Society and International Neuropsychological Society.

Mohamed Atta and Marwan al-Shehhi are also scheduled to be present at sit-INS organized by Greenpeace and civil rights organizations, although they're unlikely to attend in their current condition.

Aren't you glad April Fools' Day comes only once a year?

PacBell Security Better Than Reported

On a more serious note, I'd like to correct a portion of my Feb. 18 column, "Lessons in CRM." This column described cases of identity theft made possible in part by weaknesses in the customer relationship management software used by Pacific Bell and MCL. In one case, someone had created a Web account for my Pacific Bell services and was changing my phone services without my permission. Pacific Bell promised to cancel that bogus Web account, but that process took weeks, and the company couldn't assure me that the offender wouldn't be able to create another bogus account after the current one was canceled.

I assumed, therefore, that anyone could create such an account with little more than a phone number. I assumed wrong. The only way to complete the Web registration process is to confirm it by mail or by calling Pacific Bell from the phone number you're registering. My mail is being intercepted, so it's still a risky process in my rather unique circumstances. But these Pacific Bell safety checks should be fine for most customers.

It would have been nice if the person on the phone knew what checks were required, and I still believe that Pacific Bell should better integrate its Web services with the software it uses for its phone support. But as for how easy it is to create a bogus Web account, mea culpa, and apologies to Pacific Bell. ■



Real-time Web data analysis is gaining acceptance for business decision-making, but the complexity of creating real-time applications still keeps most projects small. By Mark Hall

WEB ANALYTICS

Get Real

IN AN ERA OF INSTANT gratification, it's only natural that IT managers are finding themselves pressured to deploy real-time Web analytics systems. But beware: Any trek into the Web's real-time world will be one populated by legacy, batched data, as well as rapid-fire, up-to-the-click information.

There are compelling reasons for using real-time Web information to make business decisions. Many of them are related to e-commerce markets, while others are emerging in product development and supply chain areas. But the complex nature of the applications involved means that most companies are only dipping their toes into real-time Web analytics waters.

"It's the land of pilot projects," quips Louis Columbus, a senior analyst at AMR Research Inc. in Boston. That's because any IT department that dives in

"must assume integration and interoperability as core competencies," he says.

A few companies, however, are wading more deeply into the technology.

Reaching Critical Mass

COMPANY: NetFlix.com Inc.

REAL-TIME CHALLENGE: Give customers instant movie recommendations based on current Web site activity and historical user data.

Your critiques of films starring Jack Nicholson or Nicole Kidman get thrown back at you in real time if you're one of the 500,000 subscribers to NetFlix.com's Web site. A pan, a thumbs up, past rentals, your profile and current Web activity all contribute to the pages served up by the "recommendation engine" from the Los Gatos, Calif.-based online movie services company.

Initially, the IT department started with a commercial application. That work stopped, says Neil Hunt, the company's vice president of e-commerce, because the canned software was ill-suited for evaluating on the fly the subjective world of tens of thousands of movie critics.

Yet, the capability was critical in order for NetFlix to distinguish itself online. "We felt we needed to own the technology," says Hunt.

So he hired mathematicians with C++ experience to write the algorithms and code to define movie clusters, relate opinions to the clusters, evaluate thousands of ratings per second and factor in current Web site behavior to deliver a specially configured Web page before a site visitor can click again.

Hunt says NetFlix's "significant" investment in proprietary technology was only made after it was deemed critical to the company's added value to the market.

He says the real-time analytics can also tell marketing managers what Web page design is working best for a given promotion and allow them to make changes immediately based on dynamic feedback.

"It's a good tool for effective design," he says.

Analytics as a Web Service

COMPANY: Infinity Pharmaceuticals Inc.

REAL-TIME CHALLENGE: Speed drug development by facilitating the process of evaluating new chemicals.

Although real-time Web analytics are mostly associated with consumer site recommendation engines like the one at NetFlix, some rapid-response software is showing up in critical applications for use inside companies.

Andy Palmer, CIO at Infinity Pharmaceuticals in Boston, says his drug discovery company's business is dependent on the underlying real-time analytics application that its researchers use when generating statistical models of how compounds will behave in a given chemical assay. With so many different models, he says, "the more real time and interactive you can be, the more effective you will be."

The toughest nut to crack for real-time Web analytics is data integration, Palmer says. This is where real-time information regularly meets batched data. For example, the company's scientists constantly need to integrate their database of chemical models with outside sources such as databases of chemical compounds.

Infinity's IT staff solved the problem by building a real-time system using Web services as its application model, so XML interfaces are coded into every program. The design also includes a standardized metadata model, and Infinity maps its data dictionaries to that.

"That way, data integration is done upfront instead of after the fact," Palmer says.

User response time is the next big problem. "We want to reduce latency to real time," he says.

To do so, Infinity has made a commitment to visualization software. "Without visualization, the number of factors presented would be too large to make real decisions," Palmer says.

The visualization software, a package from Somerville, Mass.-based Spotfire Inc., renders the analytic output from millions of compounds. "As you apply the different predictive models, you change them

and view them dynamically" in Spotfire, says Palmer. "This is something that used to take weeks, but now it's just a few seconds."

Real-Time Account Management

COMPANY: Cisco Systems Inc.

REAL-TIME CHALLENGE: Provide real-time account order activity feedback to sales department

It's not just movie buffs and scientists who need to see real-time information in a meaningful way. At Cisco, company executives says that ideally, every-

one in the business should have access to real-time information.

"The whole corporation is moving to real time," says Mike Zill, director sales finance IT at Cisco. "It's difficult to have the applications stay in batch when the architecture is message-based."

According to Zill, channel account managers in the sales department use a Web-based "dashboard," or graphical user interface-based view, from OneChannel Inc. in Mountain View, Calif., that gives them real-time views of their accounts' activities. When a business condition hits a predetermined threshold, the OneChannel software triggers an alert, sending a message or warning to the user's dashboard.

For example, if Cisco's sales department has a top-10 list of new products it wants sold through, say, Ingram Micro, the application will let the Cisco channel manager know the instant the distributor's sales fall outside target levels.

To achieve this, Cisco had to build deep hooks into its supply chain, which wasn't easy, acknowledges Zill. The firm has established agreements with its partners to receive point-of-sale data via the Internet or, in some cases, through electronic data interchange.

Most of the data is batched. Few partners will feed real-time point-of-sale data to the company, Zill says.

Once it receives the data, Cisco couples it with real-time, Web-based inventory information and processes it using analytics software from Hyperion Solutions Corp. in Sunnyvale, Calif. Channel managers can then query the Hyperion software in detail through the OneChannel dashboard to find the underlying causes of any distribution problem.

"The response time is fast enough so you're not waiting," Zill says.

And that's the essence of real time for any user. ■

FOUR STEPS TO PROJECT SUCCESS

Before trodding down a real-time path, IT managers might do well to heed the following advice from Luis Columbus, an analyst at AMR Research:

- 1 **Plan for two to six months of implementation time.**
- 2 **Expect substantial investments for data integration work, high-performance servers and storage subsystems to meet insatiable data storage requirements.**
- 3 **Visualization tools are critical to make massive data dumps understandable.**
- 4 **Try before you buy. Ask for references and a live evaluation period before committing to an analytics tool.**

NetFlix's Real-Time Reels

The company's Web application suggests movie titles to users by processing both their real-time Web site activity and historical user data and then returns the results - all within a few seconds.



Knowing When Rules Apply

Real-time applications are showing up everywhere inside companies, but not all applications lend themselves to the rules-based world of real-time analysis.

Nonetheless, "people are thinking of more clever ways to do real-time work," says Richard Lowery, national director of the customer relationship management practice at Bern, a Minnesota, Minn.-based consultancy.

CLEARING THE PIPES

Robb Thomas, communications manager at Cincinnati-based Roto-Rooter Services Co., used real-time tools to off-set an anticipated increase in wide-area network (WAN) costs.

The company's 130 franchisees run Internet and internal application traffic on the corporate WAN. Thomas set up a proxy server last year to manage all of the Web page requests so he could run company policy Web address filters centrally for remote offices.

Even with the filtering, adding the Web traffic to the WAN bogged it down. But today's budget realities nixed the idea of upgrading the network backbone.

Instead, Thomas opted for a rules-based bandwidth allocation system from NetFidelity Inc. in Santa Clara, Calif., that can change bandwidth levels in real time. The rules for who gets what bandwidth when can be as complex or as simple as you want, says Thomas. But each one should correspond to a specific business criterion, not an item on an IT wish list, he says.

SOUNDING THE ALARMS

Linda Belanger's company has been edging toward real-time alerts for its sales and customer desks. "On our order is to do alert reports so we can give instant information to our sales force about a customer in its territory," says Belanger, senior manager of decision support at Office Depot Inc. in Delray Beach, Fla.

She envisions the appropriate pagers beeping with information and instructions as soon as the system reaches a rules-defined threshold. In this way, Belanger says, real-time tools will make her company's sales force more effective.

But she adds that while real-time updates to the sales force are a plus, staffers must still evaluate the information before responding to customer issues. And the quicker the sales staff gets customer data, Belanger says, the more effective it is at generating revenue.

—Mark Hall

Quick Links

Real-time analytics turned customers of one beauty products maker into an R&D resource. Read about it online at www.computerworld.com/story/1727006

3-D Vision Speaks Volumes

You know it's 3-D when you can walk around it. By Russell Kay

IN THE CORNER OF A DIMLY LIT computer room at Actuality Systems Inc., stands a transparent globe with a diameter of about 20 in. — the world's highest-resolution 3-D, volumetric display.

Peering into this high-tech crystal ball, I see what looks like a thin green ribbon twisting around itself. At two places where there are "pockets" in the ribbon's structure sits a white blobby mass with several appendages that fit neatly into the pockets (see right photo). I can walk around the globe and look in from the top to see what had been obscured from a different angle.

Gregg Favolori, founder and chief technical officer of the Reading, Mass.-based firm, tells me the green ribbon is

a representation of the structure of the human immunodeficiency virus (HIV): the white object represents a chemical molecule designed specifically to fit the virus' complex shape.

No other type of display can show so completely how the molecule "docks" with the virus. That's when it hit me that 3-D visualization can significantly expand one's understanding of a virtual object.

What's important here is that this is a real 3-D image, not a stereoscopic picture made from two single still images and representing a single viewing point. Here, I can see the 3-D shape of the image directly from all sides. In other words, I can see it as a volume in space, which is why this is called a

volumetric display. And since much of today's research into new drugs revolves around structural issues such as designing molecules to interact with specific pathogens, visualization such as the Actuality display represents a real shortcut. Looking at a 2-D representation of the same image, I was struck by how little I could see clearly, particularly spatial relationships.

How It Works

A few other volumetric displays are on the market but none with the resolution of Actuality's. The quality, or resolution, of a volumetric image is measured in a unit called the voxel, or volume pixel. The Actuality display has a resolution of 768 by 768 pixels by 198 planes by eight colors, for a total of 116 million voxels.

By comparison, the few other volumetric displays I've seen referenced typically have only about 12 planes, a severe limitation when it comes to showing detail.

The technology behind the display is surprisingly simple. Most other attempts at creating a volumetric display involve multiple lasers and complex, often heavy, semitransparent screens.

Inside that transparent sphere, Actuality uses simple LCD projection and a white plastic disc, approximately 10 in. in diameter, which rotates at about 700 rpm. On one side in the base is a three-LCD projector that uses a normal projector-type lamp. It flashes a constantly changing image either directly onto the disc or onto a facing mirror that spins with the disc.

Behind that projector is a dedicated digital signal processor running some very complex proprietary mathematical algorithms developed by Actuality. Each "frame" must be recalculated to account for the fact that the screen is at a different angle relative to the projector every time an image is flashed onto the screen. Without such transformations, the image would be distorted and unusable.

The image displays a certain amount of flicker at some places. Favolori explains that this is because the white disc isn't perfectly flat. He says that in the interests of production simplicity, Actuality is trying to solve the problem mainly through software, without requiring an expensive, and expensively aligned, screen medium.

The display gets its data over a SCSI link from a Linux or a Windows 2000 computer. Based on OpenGL graphics standards, the display can be used with most 3-D software modeling programs. The display is the brainchild of Fava-

What's in a Name?

3-D graphics is a confusing term. Typically, it means that something is modeled in 3-D but displayed on a 2-D screen. Yes, you can manipulate objects to see hidden features, but you're still looking at a 2-D representation. A few years back,

special video cards coupled with polarized glasses could give you stereooscopic 3-D. A year ago, I reviewed a special flat-screen monitor that did the

same thing but with a standard video card and without the glasses [Techworld, Apr. 30]. That effect was, at best, it's still more an illusion of 3-D than anything else: It's just a single view, as if your head is locked into position. You can rotate the 3-D object in front of you, but you can't walk around it. Holograms also give a 3-D view, but they're limited by the size of the film. However, you can move around a holographic image.

— Russell Kay

lora, who has been playing with the problems of 3-D imaging since he was a child. Favolori is a 1996 graduate of Yale University and founded Actuality after being named a runner-up in MIT's \$50K Entrepreneurship Competition. In 2000, he was named by MIT's Technology Review as one of the country's 100 visionaries under 35 who will drive the future of technology. Actuality has limited number of staff and has received \$2.3 million in venture funding.

According to Favolori, the company had planned to spend another year developing its display technology before marketing it. But he said there is enough demand for the current prototype and that Actuality is now selling a limited number at \$65,000 for the hardware, operating software and development kit.

At that price, there should be a lot of takers, such as companies with complex data visualization needs that nothing short of a true 3-D display can satisfy.

San Diego-based pharmaceutical firm Structural Genomics Inc. is currently a beta tester. Other interested parties include medical and surgical researchers; oil and gas companies with terabytes of complex geological data; the military, which is seeking ever more powerful simulation tools; computer-aided design developers; and architects. ■



THIS SIMULATION of a plane flying over hills shows how 3-D problems involving a changing environment can be modeled.



THIS REPRESENTATION of HIV lets researchers study the virus' structure from all angles and "nest-fit" protein molecules.

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**IT'S A DIFFERENT KIND OF WORLD.
YOU NEED A DIFFERENT KIND OF SOFTWARE.**



AN EVIL ARMY of computer viruses, worms and Trojan horses will in coming years propagate to your cell phone, invade your personal digital assistant (PDA), opeo back doors into your PC and more, experts are forecasting.

Predicting what form rogue software will take is difficult, they say, but current trends offer clues. "They are coming faster," says Peter Tippet, chief technology officer at TruSecure Corp. in Herndon, Va. "When we had Friday the 13th and Form, it took a virus two to three years to go from birth to being No. 1 [in reported attacks]. Then, when the macro virus Concept came along, it took two to three months. Last year, Nimda took 22 minutes to go to No. 1."

Although the number of new viruses introduced each year is declining, "malware" is getting far more destructive (see chart). It increasingly spreads by multiple vectors, Tippet says, such as the Nimda worm, which propagated in five ways. And more viruses are being aimed at Internet servers, with desktop invasion a secondary effect.

"When you have 400,000 servers on the Internet all contributing to the spreading of an infection, you get an incredibly rapid growth," he says.

And the rogue software not only can spread in multiple ways, but it also can launch multiple attacks. "With the worm Nimda, there were multiple payloads — not just data destruction but also creating vulnerabilities and exploiting them," says Vincent Wesfor, senior director of security response at Symantec Corp. in Cupertino, Calif.

Indeed, two previously distinct groups — virus writers and hackers — are joining forces to cause double trouble. "Now we are seeing attack tools used by both sides," Wesfor says. "What if I take a buffer overflow exploit and put that on the back of a worm that goes looking for vulnerable systems?"

Perhaps the biggest boost to malware distribution will come as devices become more programmable and connected. "I am particularly worried about the merging of mobile phones and PDAs," says Fridrik Skulason, a virus researcher at FriX Software International in Reykjavik, Iceland. "Sooner or later, someone will release something with the intent of screwing up mobile phone communication worldwide."

Adds Skulason, "I am also concerned about 'slow' damage — viruses that fiddle with data, changing a single number in a spreadsheet or changing a word or two, like changing 'probably' to 'probably not' — in a document. In those cases, even a good set of backups may not help, because the data corruption might have gone on for a long time."



Graham Cluley, a senior technical consultant at Sophos Anti-Virus PLC in Oxford, England, predicts a rise in the use of "backdoor Trojan horses" sent surreptitiously by e-mail. "You run the program and that opens a door, which people on the outside can use to steal your passwords, destroy files and so on," he says. "With the increased adoption of always-on connections, more and more home and office users will get hit by them."

How bad could it get? "Sometime in the next five years, we will see a major outage of at least one service — for example, e-mail or the Web — or one part of the Internet due to malware," predicts Richard Ford, chief technology officer at Cenetec LLC in Boca Raton, Fla. He declines to give details but says, "The Internet is a lot more fragile than we sometimes think it is. We should think carefully about the different ways the Internet in general could be attacked and design around them."

Indeed, new technologies such as the Simple Object Access Protocol and the Universal Discovery, Description and Integration standard will provide entirely new ways for computers to interact, says Sarah Gordon, a senior research fellow for security response at Symantec. "With that new interaction comes an entirely new universe for the malware author to explore," she says. "We need to consider this as we create standards and deploy systems which rely heavily on these technologies."

Despite the gloom and doom, protective measures will improve, some experts say. For example, Ford says, "companies like Symantec are beginning to ship parts of a 'Digital Immune System,' which allows computers to grant 'herd immunity' to computers whenever a new virus is discovered, all with no human intervention. While the technology is still in its early stages, it bears a great deal of promise."

Malware's Destructive Appetite Grows

Viruses, worms and Trojan horses will become more powerful, more pervasive and faster. By Gary H. Anthes



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IT'S A DIFFERENT KIND OF WORLD.
YOU NEED A DIFFERENT KIND OF SOFTWARE.

Certification Value More Political Than Practical

Much of what security tests cover doesn't apply in the real world — but training keeps staff morale high

BY VANCE TUESDAY

SOME MONTHS AGO, I proudly earned my Global Information Assurance Certification (GIAC) in network intrusion detection from the Bethesda, Md.-based SANS Institute. I was impressed by the technical depth of the course and by the difficulty of the evaluation process.

I'm confident that any potential hires with this certification know one end of a TCP packet from the other. But whether they would ever get to use that knowledge in a commercial environment is a different question. The certification process goes much more technically deeper than any security professional ever needs to in our environment.

That depth comes with a price, in terms of breadth. To cover network intrusion-detection systems in such detail means that host-based detection systems and other subjects are skinned over. I recently completed my Certified Information Systems Security Personnel (CISSP) exam and found that it has gone to the opposite extreme, sacrificing much-needed depth for breadth. So, are such certifications worth it? Perhaps, but not for the reasons you read about in the marketing literature.

The Claims vs. the Reality

The SANS Institute has data showing that people with a GIAC earn 12% more than staffers without the qualification. This is a cute statistic, but one with questionable meaning: Better-funded companies are more likely to send their employees for GIAC certification and are more likely to pay them better. Professionals with the certification are generally more senior and experienced than noncertified staff. This doesn't prove

that the GIAC raises your income.

I'd like to see statistics on the salary levels of staffers who fail their GIAC test, but I know I won't anytime soon. (If you've ever offered a higher salary to new hires based on their certifications, I'd love to hear about it in the Security Manager's Journal forum.)

Despite the inflated salary claims, the SANS courses offer good training. We have sent staffers to courses and they have enjoyed themselves and improved their technical knowledge.

However, a review of job postings will show that the GIAC isn't well known. I found 2,990 security job listings, of which seven mentioned GIAC and 11 mentioned SANS. A qualification requested for 0.6% of jobs isn't going to set the world on fire.

There is one certification that does a little better: The CISSP was mentioned in 75 job descriptions, or 2.5% of the jobs. That's better, but it's still not great. A more interesting statistic is that more than 70% of the jobs that required a GIAC also required the CISSP.

Friends told me of recruitment agents who refused to put their résumés forward for appropriate jobs because they didn't have their CISSP. I also kept seeing CISSP books sticking out of people's bags on the subway, so I decided to pursue the certification myself.

The CISSP is administered by the International Information Systems Security Certification Consortium Inc., also known as (ISC)². It offers weekend exam preparation courses, but because no courses in my area were convenient, I relied on books for my training.

I had only a few weeks to prepare before the next exam. It helped that I've had industry experience and that I come from an academic background. The exam focuses on military, govern-

ment and academic security, all at a very shallow depth.

I enjoyed learning how high fences must be to deter intruders and the details of all the different kinds of fire extinguishers a data center could have. But this information is irrelevant: I've never worked anywhere that had a fence, and I've been never responsible for fire extinguishers.

Of Academic Interest

A tenth of the content is devoted to security models and architectures. It's interesting, in a purely academic way, to review some historical attempts to formalize security approaches, all of which are monolithic and inflexible systems designed for military applications. We'd never be able to implement anything like this in our environment. Anyway, despite the expense and complication of these systems, they were never truly secure. This doesn't bode well for the informal systems used in commercial environments.

The exam consists of 250 multiple-choice questions. The (ISC)² allows six hours to complete the exam, but I was done in less than half the time.

(ISC)² uses a rigorous nondisclosure agreement to discourage discussion of exam content. The cynic in me wonders if this helps it keep costs down by allowing it to reuse the same exam year after year. The lack of current material in the test I took and the use of easy-to-mark multiple-choice questions doesn't contradict this impression.

Unlike its old exams, the (ISC)²'s code of ethics is public. One of these rules requires that I "advance and protect the profession," possibly by, among other things, hiring those who are certified, all else being equal. Thankfully, this is only a suggestion and, of course, all other things are never equal. But surely a good certification shouldn't need to push people to promote it?

There are areas of the certification that I do like. Every three years, I must earn continuing professional education credits to keep my certification current. I could even earn some by having this article published — if I could get it into the system without (ISC)² connecting my pseudonym with my real name.

SECURITYBOOKSHELF

Of the three books I used to study for the CISSP, the best was *The CISSP Prep Guide: Mastering the Test* by Ronald L. Krutz, Russell Dean Wren and Edward M. Stutz (John Wiley & Sons, 2000). It covered the information required, and I found no major errors.

CISSP Exam Guide, by Harold Anderson (The Corbis Group, 2000), was the most useful. Each chapter concluded with links for further reading. *CISSP All-in-One Exam Guide*, by Sharon Harris (Osborne/McGraw-Hill, 2000), was worth buying for the nice scans on the enclosed CD, but the book itself included some very confusing explanations and wasn't very useful. Had I more time to study, I would have used the above as study aids and instead relied on *Security Engineering: A Guide to Building Secure Systems* (distributed by Ross J. Anderson (John Wiley & Sons, 2000), as my primary resource. It covers most CISSP exam subjects and includes anecdotes based on real experience.

LINKS:

www.giac.org/sansinfo: Here's a link to the SANS Institute's GIAC salary data and the pay increases it associates with the certification.
www.isc2.org: Visit the (ISC)² site for more information on the CISSP.

Publishing encourages people who have the certification to help others and share knowledge.

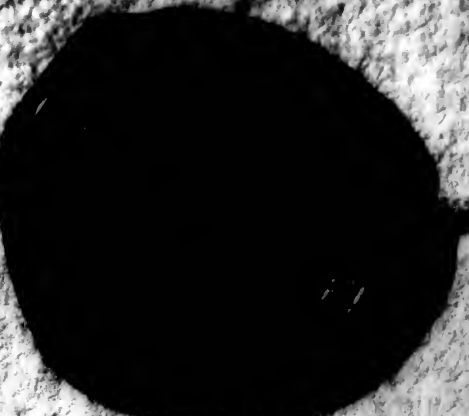
With all the flaws I've mentioned, you might think that I won't be sending my staffers to be certified. However, while I don't think the CISSP experience will be useful in their daily work, it should fill in any missing theoretical background and provide an understanding of common jargon.

But the real value for my staffers is for their résumés and their morale. My team members are bright, so they will stroll through this exam and get a boost. Paradoxically, I feel that improving my staff's chance to get other jobs will encourage them to stick around: If they feel their current position increases their skills and experience and widens their next choice, then perhaps they will stick with it. ■

Quick Link

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Random Numbers

DEFINITION

A random number can't be predicted in advance. Thus, we can define only what a random number is not, not what it is. Random numbers can be produced by physical processes, such as throwing a die, flipping a coin or counting intervals between radioactive decay events. By itself, software can't generate truly random numbers; instead, it creates what are called pseudorandom numbers, starting from a single random "seed."



BY RUSSELL KAY

WE THINK of random numbers as being somehow arbitrary and unknowable in advance. Mathematically, a given string of numbers is random if there is no shorter way to express the string than the string itself. Thus, any sequence of numbers produced by a calculation or a formula can't be truly random.

Another way to think of this is that a string is random if you can't compress it. This definition excludes π (3.14...) because a computer can re-

produce a few billion digits of π by applying a very short formula: a circle's circumference divided by its diameter. Thus, you can compress a billion digits into a short, simple formula: C/d . Unfortunately, just because you can't find a program that can compress a given sequence doesn't mean that there isn't one that someone may discover next month. Intuitively, we equate randomness with a lack of discernible patterns, but even this isn't enough, because random processes will sometimes produce short sequences that appear to be nonrandom.

We care about random numbers because they are very useful in statistical applications, in testing procedures and software, and most especially in cryptography.

The only truly unbeatable cryptographic system uses what's called a one-time pad: a string of random numbers or letters used as a key to encode a message through some kind of transformation. If the pad is used only once and is truly random, it can never be broken. Use the same pad twice, however, and it's no longer unbreakable—at least in theory.

How to Make a Random Number

During World War II, British code clerks created random numbers for one-time pads using a method akin to that used for drawing numbers for a bingo game or lottery today—by drawing them out of a hat or a machine that scrambles their order.

That method worked but was slow and labor-intensive. Today, we use software programs called pseudorandom number generators that take an input value and perform a series of transformations and procedures. The input value must be truly random and is normally based on some unpredictable real-world event.

Several physical processes can be used to create random numbers. One method uses radioactive decay, which current physical theory assumes to be random. HotBits, an Internet resource, generates random numbers by timing successive particle pairs in radioactive decay detected by a Geiger-Müller tube.

Since 1999, Intel Corp. has supplied a hardware-based random number generator for use with its 8xx series of CPU support chip sets. Implemented in the Intel 82802 Firmware Hub Device, the generator uses

thermal noise from a resistor to produce a random, non-deterministic and nonrepeating stream of bits.

Perhaps the oddest source for random numbers is lava lamps—yes, lava lamps, those lit-from-below, tapered glass bulbs with colored blobs of moving liquid that were popular in the 1960s and 1970s. Their use for random numbers was devised by researchers Robert G. Mendel Jr., Landon Curt Noll and Sanjeev Sisodia at Silicon Graphics Inc. in Mountain View, Calif., and was dubbed "Lavarand." Noll and his colleagues decided that the unpredictably rising and falling blobs in a lava

lamp would make a convenient source of randomness. Their process for generating random numbers is as follows:

A digital camera periodically photographs a set of six lava lamps, adding its own electronic noise to the data. The 921,600 bytes of the original image are compressed and scrambled into a 140-byte packet, which then serves as the seed value for a software-based pseudorandom number generator. "While any good chaotic source could be used, we favor lava lamps, in part because they are cool," the researchers say.

The importance of genuinely random seeds is illustrated in "Generating a Truly Random Number" (<http://eubelreport.com/columnists/leif/>), a report by Leif Svalgaard. He notes that "as the World Wide Web was gaining broad public appeal, the need for secure transmission of payment information (such as credit card numbers) became evident. Netscape Communications Corp.'s browser began to use the Secure Sockets Layer (SSL) for such transactions. Basically, SSL protects communications by encrypting messages with a secret key—a large, random number."

The Randomest Number of Them All?

"THERE'S AN OLD MATHEMATICIAN'S Joke: And a few decades ago, statisticians were concerned about the random number tables they had to use. They were difficult, originally and just a pain. So a number of people got together and decided that if they could find out what the most random number is, they could just use that and toss all those thick books of random numbers. After much work, they found out that the random number is 17. I won't bore you with the proof—much. The proof shows that the random number cannot be larger than 17 and then shows that it cannot be less than 17. Therefore, it must be 17. The flaw in this proof is, of course, obvious."

—Jon Callan, "Using and Creating Cryptographic-Quality Random Numbers" (2000) (www.surrey.ac.uk/~jpc/misrguide.html)

Quick Link

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FRANK HAYES/FRANKLY SPEAKING

Missing the Boat

IT CAN'T BE DONE. That's the important thing to understand about the U.S. Navy's goal of getting all its new systems to work with its existing IT. Last week, Rear Adm. Kenneth Slaght, who runs the Navy's space and naval warfare systems command, told a crowd in Washington that IT vendors will have to give up their rip-and-replace approach and figure out how to make products work with the Navy's 30,000-odd legacy systems. But it won't happen — no matter how many admirals order it. There's no way to make it happen. It's simply impossible.

But the Navy has to try anyway.

The reasons for that aren't hard to understand. Some of it comes down to budgetary politics. Old systems may be clunky and expensive to maintain, but they're paid for. Replacing them with shiny new gear is hard to cost-justify to taxpayers, even if the new equipment is faster, cheaper, more standardized, more reliable and easier to network.

And some of it comes down to office politics. Managers resist giving up their systems, especially systems they sponsored when they were first installed.

But there's another factor: Those legacy systems work. They don't need fixing because they're not broken — but the surest way to break them is to port them, re-engineer them or replace them with something new. Projects like that are quagmires that invariably suck down budgets, schedules and the morale of IT people trying to get the new versions to work.

So it's not naive to want to keep those legacy systems going. It's not foolish or self-indulgent. It's just impossible.

Sure, we all know what kind of architecture to use: You create a wrapper of new code around each old stand-alone system. That wrapper lets the old system talk to the network. To the old system, the wrapper appears to be a user or operator or administrator; to users on the network, the wrapper is a standardized interface to the old system.

It sounds great. Sometimes, you can even make it work.

But after 20 years of plastering those wrappers around legacy systems, we've learned a few ugly truths about them. One is that wrappers are slow — you usually end up having to buy a very fast new machine to serve as a gateway

to a very slow legacy system.

Another is that wrappers don't really give you everything the old system did. The wrapper-builders can never figure out how to access all the system's features. Users end up with a lame, thoroughly unsatisfactory version of what they had before.

That's why most of the systems we wrapped during the client/server and Internet eras ended up being replaced anyway. Wrappers seemed like a good idea at the time, but they turned out to be more trouble than they were worth.

But there's another problem with wrappers — one that's a lot more critical in a military context. Wrappers are fragile. They break down. They do funny things and produce screwy results — and there's no way to predict when those intermittent problems will show up.

That's annoying and exasperating in a business system, where the worst that's likely to happen is that a fragile wrapped system costs the business a sale.

But in a military system, brittle, breakdown-prone wrappers aren't just annoying or exasperating. They could cost lives and battles. That's an unacceptable risk.

And nobody knows how to avoid those problems and that risk — at least, not without junking the old systems and replacing them properly. Which is exactly what the Navy says it wants to avoid.

It's a laudable goal. And if it can help steer vendors away from grandiose dreams of getting rich by replacing the Navy's systems wholesale, maybe it's a good public position to take.

Just so long as somebody in charge understands that it can't be done. ☐



FRANK HAYES, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

NEW SOFTWARE project isn't going well, so pilot fish's boss decides to add a little levity by adding a message to the sign on screen. "When you're not looking, this screen is in German." Sure enough, next day a user calls the project manager: "When the technical team did their maintenance last night, they messed something up. Now my screens are in German when I'm not looking."

CLIENT mentions to consultant pilot fish that he's replacing an OS/2 server. "Being an OS/2 fan, I asked why," fish says. "Seems the problem is that it never crashes, so when they need to do the work on it, no one can remember how to restart it." The replacement? Windows NT, "which everyone is much more familiar with restarting."

USER calls tech pilot fish to get a "brand new, still-in-the-box" PC hooked up. "What kind of PC is it?" fish asks. User is evasive.

but finally comes clean: It's a 286-based PC that's been sitting in an unheated warehouse for about 10 years. "But it should work OK," user insists. "It's brand new."

POWER goes out, and pilot fish wants to shut down the PC that runs the alarm-monitoring system (it's on a UPS, but its monitor isn't). "I can't see the instant cursor," he grumbles. A nearby admin offers helpfully, "I have a flashlight in my desk..."

COMPANY is in the middle of migrating from one e-mail system to another, so help desk pilot fish's first question to remote user is, "Are you in Lotus Notes right now?" "No," puzzled user replies. "I'm in Topicalia, Kan."

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The 5th Wave



"It's been two days, Larry. It's time to stop enjoying the new-computer smell and take the iliac out of the box."



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